

INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By **GEORGE F. TAUBENECK**

Stories of the Week
Gags of the Week
This Man Is YOU
Out of Our Mailbag

Stories of the Week

Auguste Perret, first French architect to feature concrete construction (and not hide it behind stone facades), was practically a tourist attraction in Paris.

Handsome as a matinee idol, and dramatic as an *avant garde* poet, he used to stroll the Champs Elysees majestically—in a crimson cape, with monocle and cane.

Somebody remarked, snidely:

"I see Perret is taking his statue for a walk again."

Cousin Josie attended a Protestant Church convention. Strait-laced folk were preponderant. You know: the Sort who think a cuss word is almost as bad as taking a Drink or a Smoke. Or dancing, yet.

Josie was delighted when the Chief Mourner handed out religious slogans to be stuck on the automobile windshields of the attendees. To the rear window of her convention-going car she affixed a sign reading:

"Prayer Changes Things."

Next morning Cousin Josie drew glacial glances from Conventioners who saw her parked car.

Her irrepressible son had fastened below that "Prayer Changes Things" sticker, another sign to wit:

"If you can read this, you are too damn close."

Gags of the Week

"A little flattery now and then makes husbands out of single men."—*Automotive Dealer News*.

A gentleman is an incipient wolf until he's spotlighted.

"Although most new autos are equipped with automatic transmissions, one-armed drivers still use the conventional clutch."

This Man Is YOU

Writes Herbert Leggett in *Arizona Progress*:

"I am what is known as an independent voter. I am also an average, complacent, middle-of-the-road type of citizen. My motto, if any, would probably be, 'Live and let live.' Most of the time I am pretty neutral politically. Sometimes I vote Democratic, sometimes Republican. When the issues are too confusing or the promises too gaudy, I sometimes say, 'A plague on both their houses.'"

"But recently I have done some figuring. Come to think of it, there are millions of me. We have been the deciding factor in almost every presidential election since the Civil War—and many local elections in key political states. This is true whether we vote or not. I am beginning to understand why politicians are so polite to me around election time. Actually these big, fantastic, expensive campaigns are staged for my special benefit.

"Maybe I am not such an insignificant worm after all. Maybe I am just a Giant Moron who doesn't know his own strength. Guess I'm just about the most important guy in the entire setup. Maybe I'd better start acting the part. From now on I'd better look into things a little more carefully. I'd better listen more attentively when political candidates present their arguments.

"I have seldom tried to put my
(Concluded on Page 2, Col. 5)

ISSUED EVERY MONDAY AT 430 W. FORT ST., DETROIT 26, MICHIGAN. ESTABLISHED 1925



AIR CONDITIONING & REFRIGERATION News

THE NEWSPAPER OF THE INDUSTRY

Vol. 74, No. 4, Serial No. 1,349 **JANUARY 24, 1955** Subscription Price: \$6 Per Year

Reentered as second-class matter October 3, 1936 at the post office at Detroit, Michigan, under the Act of March 3, 1879. Trade Mark Registered U. S. Patent Office. Copyright 1955, by Business News Publishing Co.

New Cooling Lines In Show Spotlight

'Who, What, and Where' of Residential Unit Sales in Some Main Areas Surveyed

If you have any interest in residential air conditioning you won't want to miss the article on pages 10 and 11 describing 1954 sales of residential air conditioning systems in Cincinnati in terms of type of seller, type of buyer, and type of equipment.

Heavy percentage of the Cincinnati installations involved units of old-line air conditioning manufacturers installed in some cases by heating dealers working under the guidance of veteran refrigeration and air conditioning contractors functioning as wholesale distributors.

Similar studies made recently in Wichita, Fort Worth, and Memphis disclosed that most of the residential jobs were being installed by air conditioning contractors. In Minneapolis, however, the heating contractors were getting the business.

These surveys have also developed comparative figures on the market in existing homes, new homes, and speculative builder homes; air and water-cooled jobs, and the like.

See Tighter Credit Hitting New Building

CHICAGO—Home builders at their convention here last week were warned that they might run into a "very tight mortgage market" if they tried to increase the number of starts over the 1,215,000 figure of 1954.

This warning came on the heels of some moves by the Federal Reserve Board which in financial circles was interpreted as "letting the money market tighten up."

The warning to NAHB members was sounded by Dr. George Conklin, economist of Guardian Life Insurance Co., who said that the credit outlook now is about reverse of a year ago.

"Then there was a decline in business activity, declining inventories, good credit available at declining rates. This year inventories are rising, receivables are accumulating instead of liquidating. On the supply side, savings, there is very little change."

At the 1954 rate of building, the economist said, the increase in demand for short-term credit by business would indicate "a slight tightening of money and interest rates and a little less money for mortgages."

"What kind of scares me," Dr. Conklin said, "is the December rate of housing starts—a record of 91,000 houses, up 90% from the 1953 month. If this is projected into 1955, it would mean 1,700,000
(Concluded on Page 4, Col. 2)

Injunction Against Pipefitters Upheld

PHILADELPHIA—In a dispute between the pipefitters and another union on certain work on an air conditioning job, the U. S. Circuit Court of Appeals here has ruled that a labor union can be enjoined from engaging in unfair labor practices on unspecified jobs when it appears, in view of past activities, that the union may commit unfair acts.

The court unanimously upheld a decision by P. S. Judge Allank K. Grim which enjoined Philadelphia Local 420 of the Plumbers and Pipefitters Union from interfering with construction jobs on which the A.F.L. Bridge and Iron Workers had been awarded jurisdiction.
(Concluded on Back Page, Col. 5)

Hearing Postponed on Capital Licensing Bill

WASHINGTON, D. C.—A 30-day postponement of any action on a proposal to license refrigeration and air conditioning installation and servicemen in the District of Columbia was ordered by district commissioners after several segments of the industry complained, at the Jan. 17 hearing, that they had not been given enough time to study and appraise the proposed ordinance.

The proposal had the backing of the Refrigeration Trade Association.
(Concluded on Page 4, Col. 2)

2 New Window Unit Lines Introduced

Fresh'nd-Aire Offers 3 Separate Series

CHICAGO—Cory Corp. has announced plans for a complete new line of Fresh'nd-Aire room air conditioners for 1955 that will comprise three separate series of flush-mounted, pushbutton "Electromagnetic" window units plus a new flush-mounted "In the Wall" automatic air conditioner to be available in ¾ and 1-ton capacities.

At the same time, the company announced a new program of trade pricing and an "unusual" dating plan.

J. W. Alsdorf, Cory president, said the "different" price program
(Concluded on Page 31, Col. 3)

Remington Shows Window And New Console Line

AUBURN, N. Y.—New products, new intensified retailer promotions, and a new advertising campaign keyed to local markets, were presented to company sales representatives at the recent annual sales meeting of the Air Conditioning Div. of Remington Corp.

Three new window models were unveiled by Remington: a new ½-hp., model S6C, and a new ¾-hp., model S7C, presented as low-budget models in the new "Pace-maker" series. Suggested retail for the S6C is \$239.95. The S7C will retail at \$279.95. Priced
(Concluded on Page 2, Col. 2)

First Report on Air Conditioned Austin Village

Pros: People Like It, Operating Cost Low

Cons: Some Units Noisy, Condensation a Factor

By C. Dale Mericle

CHICAGO—"The families . . . are happy with their air conditioned homes, and the equipment and systems are operating satisfactorily."

These were two "fundamental results" observed at the widely publicized Air Conditioned Village at Austin, Texas, Ned Cole, project manager, revealed in a preliminary report at the 11th annual convention of the National Association of Home Builders here last week.

Final report covering technical, medical, and psychological studies made at the 22-home project will not be available for several months, Cole said.

At the NAHB exhibits the numerous manufacturers showing residential cooling systems received good play, but appliance manufacturers featuring new built-in ranges, etc., in appealing colors and new designs seemed to be attracting even more attention.

A preliminary general report on system performance at Austin was also presented at the Chicago meeting by C. W. Nessel, director of the mobile laboratory of the National Warm Air Heating and Air Conditioning Association, co-sponsor of the Austin project along with the Air-Conditioning & Refrigerating Institute and the NAHB.

(Details of the reports of Cole and Nessel and comments of others will appear in future issues of AIR CONDITIONING & REFRIGERATION NEWS.)

Here are some of the highlights
(Concluded on Back Page, Col. 3)

Hastings Home Unit Has '2-Stage' Cooling

PHILADELPHIA—A "Double-Kool," two-stage, self-contained air conditioner which is claimed to have "a cooling capacity of 5 to 7 tons (depending on water temperature) but uses a 3-hp. compressor," has been announced by Hastings Air Control, Inc., sales division of Hastings Air Conditioning Co., Omaha, Neb.

The new product is being presented at the International Heating & Ventilating Exposition here.

The company said the difference in capacity of the unit is gained by first using the condenser water for pre-cooling the entering air.
(Concluded on Back Page, Col. 2)

Place	
Commercial Museum and Convention Hall, Philadelphia	
Dates	
Jan. 24 through Jan. 28	
Hours	
Monday—2 to 10 p.m.	
Tuesday, Wednesday, and Thursday—12 noon to 10 p.m.	
Friday—12 noon to 6 p.m.	
Admission	
By invitation and registration only. Anyone who has a genuine interest in the heating or air conditioning fields can gain admission by registering.	

tion to exhibits of complete package systems for commercial and residential use, all of wide variety of components for producing, installing, and servicing heating and air conditioning equipment will be on display.

Those interested in attending the Exposition who do not have hotel reservations might find it easier
(Concluded on Page 8, Col. 1)

DON'T MISS . . .

Where Will Residential Air Conditioning Be Sold?

Study of Factors To Be Considered In Establishing Market Potentials of Various Parts of Country 6

Water Treatment

What Does It Cost? How Is It Accomplished? And How Expensive Is It? 12

Problems In Installing 'Add-On' Residential Systems

Discussion of Electrical, Plumbing, and Ducting Problems In Air Conditioning Existing Homes 15

Service Dept. Cost Accounting, Inventory Control

Businesslike Operation Can Spell Difference Between Profit and Loss, Contractor Finds 16

The Miami Story

Facts and Figures on 1,050 Hp. Air Conditioning System In Miami's New Hotel Fontainebleau 24

Balancing Refrigeration Systems—2

How To Select Proper Flow Control Devices 26

Motel's Multi-Zoned Air Conditioning

Sixteen Units Provide Flexible Heating and Air Conditioning 30

. . . In This Issue

WHY WAIT HOURS?

When you have "freeze-ups" (or other moisture troubles) why not stop them right away? Why wait for the moisture to be picked up?

Thawzone goes right to the moisture. No delay. It travels through the refrigerating unit right away. You get action quickly, wherever the moisture may be.

Remember, the drier that destroys moisture is Thawzone. The water can't come back. And no clogging with oil or pressure drop with Thawzone. Costs only about 8¢ per lb. of refrigerant treated.

For all "Freon" or methyl units. Your wholesaler has . . .



THAWZONE®

THE LIQUID DRIER

Redmond

MICROMOTORS

One of largest stocks in the world!

FACTORY DISTRIBUTORS

CYCLO-FREEZ CORP.

MARVIN L. "FERGIE" FERGESTAD
6318 Cambridge, Mpls. 16, Minn.
West 9-6794

Remington Program for '55--

(Concluded from Page 1)

slightly higher will be the regular standard 6C, (1/2 hp.) and a deluxe D6C, (1/2 hp.) which complete this Pacemaker series.

Outward appearance of all Pacemaker models is similar. They feature Remington's "Airflo Fresh'ner" for odor elimination, advanced tube and sleeve air seal design for tighter installation and more efficient operation, box girder chassis construction for longer life, easier installation, and less service, and "Adjust-O-Mount" which permits installation nearly all in the room (flush with the building line) or nearly all out of the room (flush with the drapes), or any desired point in-between.

The deluxe unit features a 2-speed fan and thermostat for automatic temperature control.

The Custom series of three basic window models resembles last year's models of this line, but has been improved and features several innovations including Airflo Fresh'ner. The Custom line consists of a 3/4-hp. model 8C, a D8C deluxe 3/4-hp., and a 11C deluxe 1-hp. window unit.

Two units, the 8CR and 11CR (1 hp.), are available in Reverse Cycle. The deluxe units have thermostat control and 2-speed fan is available on all 3/4-hp. units. The 1-hp. units also have automatic thermostat control. The 3/4-hp. units are available in 115 and 230

DISTRICT SALES MANAGERS Edward Runge, Washington, D. C.; Harry Duval, Richmond, W. H. Lassiter, North Carolina; Frank Cashman, Jr., Florida, watch W. H. Figg, district service manager, point out operating mechanism of a Remington "Custom Series" air conditioner.



volts with the deluxe units also available in 208-volt characteristics. The 1-hp. 11C models are available in 208 or 230 volts 60 cycles single phase.

A new "Superaire" series of window units consists initially of one basic model, a deluxe 1 1/2-hp. window unit. This unit was announced as exceptionally compact for one of this capacity.

Two new units that have been added to the Tropic-Tested Remington console line were previewed by Remington representatives. Named the "Consolaire," the new units will be available in both 3/4-hp. and 1-hp. capacities.

The new Consolaires are said to occupy less than 50% of the floor area of conventional console units, require no extra ducts, are adjustable up or down—in or out of the window or wall opening. These units are said to satisfy city ordinances and building regula-



CONSOLAIRE—Remington's new air conditioner which fits flush with building line or flush with window line. Available in 3/4 or 1 hp.

tions—which are becoming increasingly important across the country.

Another console to be made by Remington in 1955 is the new, quieter model 12E—the "Overton"—a 1 1/2-hp. air-cooled unit that will be available in a genuine traditional Honduras mahogany or blonde wood cabinet, or as a leader model in a metal furniture steel cabinet. A \$185 reduction in retail list of the mahogany cabinet model from the \$884.50 (1954 price of its predecessor model) to \$699.50 for 1955, was announced.

Frank A. Mitchell, general sales manager, announced "an intensified Remington sales drive for 1955." Known as the "Big 5 for '55," the program encompasses a Demonstrator Allowance Plan; an Inventory Protection Plan; and "1 for 9" Plan. A new "Sales Center," an ultra-modern sales making display that can be used with all Remington units, was also shown.

In the "Big 5 for '55" is a weather forecasting plan through which Remington dealers will be kept advised of the weather outlook for their particular locality so that they can plan purchases and programs well in advance.

Details of Remington's 66th Anniversary promotion with "localized sell" were presented by C. Kenneth Juno, Remington's advertising manager, and Gould & Tierney, Remington's advertising agency. It was pointed out that the bulk of Remington's advertising money was being invested in localized newspaper campaigns to "sell the neighbors" at the community level.

Suggested list prices for the 1955 line of Remington air conditioners are as follows:

PACEMAKER SERIES

Model	Description	Suggested Ret. Price
S6C-21	1/2 hp.	\$239.95
6C-21	1/2 hp.	249.95
D6C-21	1/2 hp.	289.95
S7C-21	3/4 hp.	279.95
S7C-33	3/4 hp.	289.95

CUSTOM SERIES

8C-21	3/4 hp.	299.95
D8C-21	3/4 hp.	319.95
D8C-33	3/4 hp.	319.95
11C-33	1 hp.	349.95
11CR-33	1 hp.	389.95

SUPERAIRE

WD15A33	1 1/2 hp.	499.95
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CONSOLAIRE

CD8G21M	3/4 hp.	429.50
CD8G33M	3/4 hp.	439.50
CD10G33M	1 hp.	499.50

CONSOLE

12D129M	1 1/2 hp.	699.50
12D129C	1 1/2 hp.	599.50

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(Concluded from Page 1, Col. 1)

own political philosophy into words. Basically, I suppose, I believe in rotation of responsibility rather than perpetuation of power. I am sold completely on the Two-Party System of government. It is our best safeguard against totalitarianism, radicalism, irresponsibility, skulduggery, and human error. I happen to believe also that neither party has a monopoly on brains, integrity, and patriotism.

"Probably the most important thing for everyone to keep in his mind is that both major parties are actually minority parties. This puts it strictly up to me. This means that I've got a job on my hands. Democrats and Republicans can pass the buck to each other, in case of trouble, but I can't pass it to anyone. I am the Court of Last Appeal. For the sake of America, myself, and my loved ones, I must be sure I know what the score is. I must try my best to come up with the right decisions."

Out of Our Mailbag

New Effington Creamery
New Effington, S. D.

Editor:

I read your column every time the REFRIGERATION NEWS comes out. I find it very interesting and I like the jokes. I have a joke here I would like you to read. It is slightly spicy and it is very cute.

A kitten running down the street was singing "All I want for Christmas is three little kittens."

A tomcat heard this and he started chasing her while singing, "Here comes Santa Claus."

It's kind of late in season, but I think it's still good.

ROLAND GRIEP

Chrysler Corp.
Export Div.

Editor:

A story going the rounds has it that during the 1948 campaign Mr. Truman's train stopped on an Indian reservation and the President delivered a speech.

"I am appalled," he said, "at the treatment of you noble Red Men by administrations previous to mine, particularly the Republicans. As our train pulled in, I saw squaws washing clothes by the riverside. I intend to have an automatic washer installed in every tepee!"

The Indians broke into loud cries of "Oompah-oompah!"

The President beamed broadly and continued, "And I understand you are still obliged to dry beef for jerky. Well, I intend to see that every wig-wam is equipped with a home freezer."

Again the Indians shouted, "Oompah-oompah!"

The President soared to a climax. "If re-elected, I intend to see that a new Pontiac shall stand before every tepee."

As he bowed, the Indians roared out their mightiest "Oompah!" Their Chief came forward and placed a war bonnet on the President's head. Then he led the Great White Father to the corrals.

"The Indians of this reservation," he said, "take great pleasure in presenting you with a silver-mounted saddle and our very best Indian pony."

As the President prepared to mount the handsome animal, the Chief cried out, "Be careful, Mr. Truman. Don't step in the Oompah!"

KEN L. CRAPEAU,
Airtemp Sales Manager



JUST MY EXTRA PROFITS
ON G-E HOME COOLING
BUSINESS PAID FOR MY NEW CAR
... AND MY HEATING SALES
ARE UP TOO SINCE I
SWITCHED TO G-E

Good things happen when you "sign up" with G.E.

New '55 models don't grow on trees. And simply by "signing up" with G.E. doesn't mean you will find heating and cooling prospects breaking down doors to place an order.

On the other hand, you'll find that the good things in life come a lot faster and easier . . . when you have that G-E monogram over the door of your shop.

The advantage is yours . . . because folks everywhere have confidence in G.E. You sell a full line—a line designed to meet every home heating and

cooling need! As if that weren't enough, there's a famous warranty that gives you and your customers more protection than anything you've seen yet—5 years on the sealed-in system of the cooling unit, for example.

If we've whetted your appetite . . . if you want to find out how you can get in on the fast-moving G-E picture . . . just send the coupon below. Learn about the great G-E line and the new G-E "Charlie Boggs" Profit Plan. Obligation? None at all. Except the one to yourself, and to your future.

HOME HEATING & COOLING DEPT.

Progress Is Our Most Important Product

GENERAL ELECTRIC

General Electric Co.—Home Heating & Cooling Dept. AC-1
Bloomfield, N. J.

Yes, I want the facts on why "signing up" with G.E. will step up my sales and progress.

Name _____

Type of Business _____

Address _____

City _____

Zone _____

State _____

Air Conditioning Is Most Wanted New Item, Utility Survey Finds

NEW YORK CITY—Two surveys taken recently by Consolidated Edison Co.—one of private home residents and the other of apartment building dwellers—revealed that the room air conditioner was the most wanted appliance.

A total of 8,539 residents of private houses were interviewed. Of this number, 3,609 indicated they would like to own additional appliances. Of the latter, 1,216 said an air conditioner was the appliance they didn't have but would most like to own.

In the other survey, residents in 541 apartment buildings were questioned. Air conditioners were listed first by the 57.3% who said they wanted new appliances. Over 76% of those in the \$90-or-more rent bracket (above 25% of those surveyed) either owned or wanted

an air conditioner.

Other appliances desired by apartment house dwellers were washing machines, broilers, TV sets, and freezers, in that order.

Here's how the residents of private homes voted as to the next appliance they wanted: Air conditioners, 1,216; washing machines, 519; dryers, 497; freezers, 321; electric ranges, 253; dishwashers and kitchen fans, 216; ironers, 138. Other appliances got a few votes.

The survey of private houses took in about 1% of homes in the company's territory.

Asked why new appliances had not been purchased, 42% said buying cost was the reason. Other factors: Inadequate wiring (32%); operating costs (1.9%); lack of space (14%); owner would not permit it (9%).

James O. Covington, manager of the utility's Adequate Wiring Bureau, said the latter reason is another way of saying wiring is inadequate. He reported that the studies indicated 78% of the homes covered had inadequate wiring.

New Basis for Office Air Conditioning Rental Promoted by N. Y. Firm

NEW YORK CITY—A "rental plan" for air conditioning equipment for industrial establishments and office buildings, with certain new features, is being promoted to the realty investment and management field here by the Broadway Maintenance Corp. of Long Island City.

Air conditioning equipment can be installed, by terms of the plan, on a rental basis for tenants occupying 60% or more of the total square feet in any building. (Additional air conditioning could be installed at any later date, of course.)

If the installation of the rented facilities under the plan should require a changeover to heavier electric line, additional water capacity, or other such changes in the building's structure or facilities, the owners of the building can get such added facilities on an operating overhead basis, rather than as a capital investment.

The plan also provides that the rental fees can be billed direct to tenants by the Broadway Maintenance Corp., or to the owners of the building, who would then levy extra charges for the tenants.

100-Ton Air Conditioning Job Considered for Plant To Aid Comfort, Efficiency

BISHOPVILLE, S. C.—Officials of Biflex Bishopville Corp., employing about 300 persons, mostly women, have requested Bishopville Development Co. to air condition the entire building housing the local plant.

Biflex executives feel that air conditioning the plant will be a big factor in increasing the efficiency and comfort of the employees. It will require a 100-ton air conditioning unit costing about \$25,000.

Andrew Ward Appointed Packaged Products Sales Mgr. for Worthington Div.

HARRISON, N. J.—M. M. Lawler, Worthington Corp. vice president of air conditioning and refrigeration, has announced the appointment of Andrew F. Ward as sales manager, packaged products, in the corporation's Air Conditioning & Refrigeration Div.



A. F. Ward

In his new post, Ward will direct the activities of the distributor-development group and product-section managers of Worthington's packaged commercial and residential air conditioning products from headquarters here.

Prior to joining Worthington early in 1954 as staff assistant to Lawler, Ward was general sales manager of the Williams Div., Eureka Williams Corp. Previously, he had served in various sales capacities with the Airtemp Div., Chrysler Corp.

3-Room Apartment Uses 1-Ton Packaged Air Conditioner for Complete Cooling

PEORIA, Ill.—Cooling an entire three-room apartment with a 1-ton hermetically-sealed York packaged air conditioner installed in a central closet has opened a new market for this type of equipment for Ruyle Refrigeration Corp. here.

Keith Ruyle, president of the company, said that he made such an installation in the Knoxville Manor apartment house here in 1953 for one of the tenants at the tenant's expense.

The job has worked so well, he related, that five other tenants in the 24-unit apartment building have since ordered units installed.

In making the installation, Ruyle attached the unit to the wet-heat lines of the apartment and put a 20 by 36-in. plenum across the top of the closet. Grilles on two sides of the closet cool the L-shaped living room and kitchen.

A 42-in. duct concealed in an archway runs from the plenum to the bedroom across a hallway from the closet. The thermostat is located on the outside of the closet in the living room.

While the tenants who have installed the units already are pleased with the results, there is one drawback. If the tenant decides to move, the unit must be left behind as it becomes a permanent part of the building, Ruyle said.

Savannah Hotel Lets Contract For Cooling, Heating System

SAVANNAH, Ga.—A contract for installation of a completely automatic air conditioning and heating system in the Hotel Savannah was recently awarded under a program for improving the local hotelery.

Jesse Hursey, manager of the hotel, said that Erickson's, mechanical contractors of Savannah, was awarded a contract exceeding \$200,000 for the air conditioning and heating work with completion of the project scheduled for May of next year. Included in the project are 255 guest rooms and all public meeting spaces such as civic rooms and the lobby.

COOLING OR HEATING — the complete line

THERMO EXPANSION VALVES



TYPE 402
with pressure limiting feature



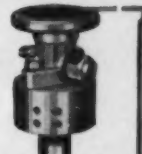
TYPE TK
"3 valves in 1"



TYPE TCL
with angle connections



TYPE TCL
with straight-thru connections



TYPE TR
Multi-Outlet

For automatic control of liquid refrigerant on all types of refrigeration and air conditioning systems. Capacities: from fractional tonnage to 220 tons Freon-12, 350 tons Freon-22; selective charges. Low temperature valves for -40°F to -100°F.

SOLENOID VALVES



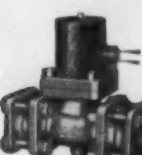
TYPE S1



TYPE S2



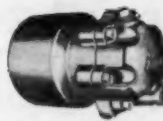
TYPE M3



TYPE R2

For all types of service. For liquid: Freon-12 up to 75 tons; 110 tons Freon-22. For suction: Freon-12 up to 10 tons; 15 tons Freon-22. For brine, water, steam, hot gas discharge, air and oil.

FLOAT VALVES AND SWITCHES



TYPE HK
high pressure float valve. Up to 5 tons Freon-12, 8 tons Freon-22 and 20 tons Ammonia.

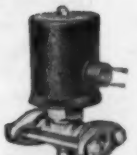


TYPE J5
electric float switch. For Freon, Methyl Chloride, Ammonia and other non-corrosive liquids having a specific gravity of .5 or more. Up to 230 volts AC or DC.



908 LECTRO-LEVEL
electronic remote control of liquid level. Accurate control for full-flooded evaporators. Adjustable to a wide range of level changes. Easy-to-set control dials conveniently mounted in remote box.

AMMONIA CONTROLS



TYPE M91F



TYPE TG



TYPE UG



TYPE TX



TYPE E
with strainer

Solenoid Liquid Valves — up to 172 tons. Solenoid Suction Valves — up to 28 tons. Thermo Expansion Valves — from fractional tonnage to 125 tons. Automatic Expansion Valves — from fractional tonnage to 60 tons.

SUCTION LINE CONTROLS



TYPE EPR
EVAPORATOR
PRESSURE
REGULATORS

For all refrigerants, with connection sizes up to 6"



TYPES 771-772
SUCTION
PRESSURE
REGULATORS
(Hold-Back
Valves)

Prevent motor overload. Freon-12, Freon-22.



TYPE 760
"EVAPOTROL"
Pressure regulator — 1/2 ton, Freon-12 — 3/4 ton, Methyl Chloride.



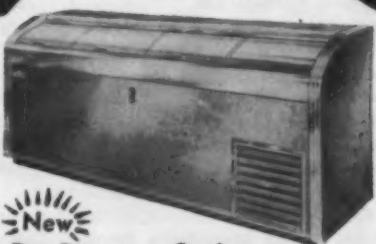
ALCO ALSO OFFERS YOU
Constant Pressure (Automatic) Expansion Valves—Reversing Valves—Liquid and Suction Line Strainers.

For capacities in excess of those listed, write us and give specific requirements. SEE YOUR ALCO WHOLESALE

ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.

NOLIN

Leads the Field



New Dry Beverage Cooler

- LEADS IN CAPACITY
- LEADS IN QUALITY
- LEADS IN PERFORMANCE
- LOWEST IN PRICE

NOLIN MANUFACTURING COMPANY
1400 LLOYD ST. PH. LD. 57
MONTGOMERY, ALABAMA

You can be sure of the
QUALITY
when you

SPECIFY

READING COPPER TUBING

FOR REFRIGERATION
& AIR CONDITIONING
EQUIPMENT



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TUBE CORPORATION

EMPIRE STATE BUILDING
NEW YORK 1, N. Y.
WORKS: READING, PA.

Tighter Credit--

(Concluded from Page 1, Col. 2)
houses for the year."

He said that any such increase in building starts would set government financial agencies to tightening up credit because "the government doesn't want an all-out boom now and then a decline in 1956 just before the elections."

The moves that indicate a tightening of credit are in the realm of somewhat complicated "high finance" on the part of both government and business, and have been along the following lines. Interest costs on two kinds of business borrowing—bankers acceptances and commercial paper—have moved up for the first time in well over a year. Government securities prices have dropped somewhat sharply, and the U. S. Treasury's borrowing costs on its short term bills have gone up.

Licensing Hearing --

(Concluded from Page 1, Col. 3)
tion, which claims to have a membership of 50 installation and service contractors in the area.

Opposition came from a group of contractors and suppliers, the Air-Conditioning and Refrigeration Institute (representing manufacturers), and from Local 602, Steamfitters Union, which said that the proposal was "an attempt to foster a monopoly."

List of Companies Exhibiting at the Air Conditioning Exposition

International Heating & Ventilating Exposition (Jan. 24-28, Philadelphia)

COMPANY	BOOTH NO.	COMPANY	BOOTH NO.	COMPANY	BOOTH NO.
A-J Mfg. Co.	413	Pump Div. of Pitz Foundry, Inc.	735, 737	Doerr Electric Corp.	C-121
A-P Controls Corp.	744	American Iron and Steel Institute, Committee on Steel Pipe Research	309	Dole Valve Co., The	421-423
Accec Electric Corp.	426	American Machine and Metals, Inc.	210	Dollinger Corp.	304
Acme Industries, Inc.	501	American Radiator & Standard Sanitary Corp.	26, 28, 47, 49	Donaldson Div., Marvin D. Shafer Co.	C-55
Acme Mfg. Co.	S-18	American Society of Heating & Air-Conditioning Engineers, Inc.	68	Dongan Electric Mfg. Co.	S-35
Acro Mfg. Co., The Crise Controls Div.	332	Ammerman Co., C. L.	S-49	Doyle Vacuum Cleaner Co.	C-22
Addison Products Co.	C-62	Anderson Co., The V. D.	725	Dravo Corp.	639
Adelta Mfg. Co., Inc.	634	Anemostat Corp. of America	406-408	Drayer-Hanson, Inc.	214
Affiliated Gas Equipment, Inc., Bryant Heater Div.	C-114	Armstrong Furnace Co.	1-3	Dunham Co., C. A.	C-150, C-151
Air Conditioning & Refrigeration News	5	Armstrong Machine Works	626-6, 28	Kinetic Chemicals Div., du Pont de Nemours & Co., Inc.	335
Air Control Products, Inc.	25	Armstrong Steam Trap Co.	626-628	Durant Insulated Pipe Co.	S-14
Air Controls, Inc., Div. of The Cleveland Heater Co.	617	Arrow-Hart & Hegeman Electric Co., The	5-72	Dura-Dyne Corp.	C-33
Air Devices, Inc.	533	Atlantic Pipebending & Fabricating Corp.	308	Dwyer Mfg. Co., F. W.	715
Airon Engineering Co.	C-25	Auer Register Co., The	C-59	Eagan Co., Inc., Walter H.	348
Air-Maze Corp.	109			Eckhart Mfg. Co., Inc.	330
Air-Path Products Co.	S-81			Eddington Metal Specialty Co.	C-29
Air & Refrigeration Corp.	69			Ejay Baseboard Mfg. Co.	C-53
				Electricigas Corp.	843

AIRTEMP

Airtemp Division,	
Chrysler Corp.	636 to 646
Airtherm Mfg. Co.	713
Ajax Boiler & Heater Co.	5-34
Alco Valve Co.	322
Aldrich Co.	630-632
Allen-Bradley Co.	338-340-342
American Air Filter Co., Inc.	C-116, C-118, C-122, C-126, C-130
American Blower Corp.	22, 24
American Coils Co.	613
American District Steam Co., Inc.	705-707
American Furnace Co.	77
American Gilsonite Co.	847
American Hydravac,	

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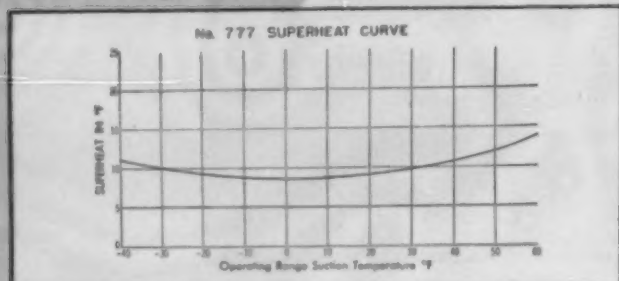
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- Mount in any position
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- Accessible and easy superheat adjustment
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(Concluded on next page)

BRUNNER		Illinois Iron & Bolt Co.	S-112
Frick Co.			317
Brunner Mfg. Co.	600	Frigidaire Div.,	
Buffalo Forge Co.	522-526	General Motors Corp.	52-54
Bundy Tubing Co.	621	Fueloil & Oil Heat	108
Burgess-Manning Co.,		Fulton Sylphon Div.,	
Architectural Products Div.	616-618	Robertshaw-Fulton Controls Co.	334-336
Burnham Corp., Boiler Div.	401	Gallaher Co., The	248
Bush Mfg. Co., The	250	Gas Heat	108
Byers Co., A. M.	240	General Automatic Products Corp.	14
Cambridge Filter Corp.	S-67	General Blower Co.	425-427
Carey Mfg. Co., The Philip	S-121	General Chemical Div.,	
Carlson Products Corp.	739	Allied Chemical & Dye Corp.	S-95, S-97
Carnes Corp.	521	General Controls Co.	56
Carrier Corp.	204-206		
Carver Pump Co.	743	GENERAL ELECTRIC	
Century Electric Co.	900	General Electric Co.,	
Century Engineering Corp.	502	Apparatus Sales Div.	933-935
Chace Co., W. M.	316	General Electric Co.,	
Champion Blower & Forge Co.	643	Commercial & Industrial Air	
Char-Gale Mfg. Co.	726	Conditioning Dept.	C-113
Chelsea Fan & Blower Co., Inc.	244	General Electric Co.,	
Chicago Blower Corp.	48	Weathertron Dept.	347
Chicago Pump Co.	201-205	General Filters, Inc.	6
Circle Air Industries, Inc.	S-23	General Fittings Co.	S-36
Clarage Fan Co.	C-170	General Gas Light Co.	313
Clayton & Lambert Mfg. Co.	C-64	General Heating Products Co.	S-57
Cleaver-Brooks Co., Boiler Div.	147	General Register Corp.	C-40
Cleaver-Brooks Co., Burner Div.	932	Gerwin Industries, Inc.,	
Cleveland Heater Co., The,		Thermo-Base Div.	S-101
Air Controls, Inc., Div.	617	Gibson Industries, Inc.	S-113
Cobelli Industries, Inc.	S-96	Goodfellow Co., Inc., E. D.	61
Cole Hot Blast Mfg. Co.	S-76	Goodyear Tire & Rubber Co., Inc., The	939
Coleman Co., Inc., The	539-543-547	Goulds Pumps, Inc.	C-20
Columbia Burner Co., The	C-35	Governair Corp.	601
Combustion Control Div.,		Graham Mfg. Corp.	S-98
The Electronics Corp. of America	55	Gustin-Bacon Mfg. Co.	740
Combustioneer Div.,		Halstead & Mitchell	C-36
The Steel Products Engineering Co.	135	Harris & Co., Arthur	620
Commercial Filters Corp.	431	Hart & Cooley Mfg. Co.	610
Committee on Steel Pipe Research,		Hastings Air Control, Inc.	S-45
American Iron & Steel Institute	309	Heat-Timer Corp.	C-34
Condensation Engineering Corp.	226	Hell Co., The	122-126-132
Congress Drives Div., Tann Corp.	647	Henry Furnace Co., The	36 & 57
Connor Engineering Corp.	813	Herbater Products Co.	S-22
Continental Air Filters, Inc.	926	Herco Oil Burner Corp.,	
Contractor, The	S-106	Div. of Harr & Co., Inc.	S-108

COPELAND

Copeland Refrigeration Corp.	C-129	HomEase Products Div.	407
Corbman Bros.	234	Howard Ind., Inc.	S-75
Cory Corp.	C-158	H-P Products, Inc.	S-118
Crane Co.	134-233-235-239	Huck Mfg. Co.	S-124
Curtis Refrigerating Machine Div.,		Hydrotherm, Inc.	836
Curtis Mfg. Co.	51	Hy-Lo Burner Co., Inc.	C-28
Cutler-Hammer, Inc.	208	Ilg Electric Ventilation Co.	633
Daffin Mfg. Co.	C-51	Illinois Engineering Co.	C-109, C-110
Davidson Fan Co.	422	Illinois Iron & Bolt Co.,	
Dayton Rubber Co., The	443-445	Freeman Heating Div.	S-112, S-114
DeBathezal Fans Div.,		Illinois Testing Laboratories, Inc.	805
American Machine & Metals, Inc.	210	Imperial Brass Mfg. Co.	202
Delavan Mfg. Co.	4	Independent Register Co.	701
Delco Products Div. of		Industrial Press, The	C-12
General Motors Corp.	S-31, S-33	Industrial Sound Control, Inc.	S-27
Delta Heating Corp.	150	Infra Insulation, Inc.	S-104
Detroit Controls Corp.	35	Ingersoll-Rand Co.	901
Devices, Inc.	302	Insulating Concrete Corp.	118
Diehl Mfg. Co.	739	International Heater Co.	514
Dielelectric Products Co., Inc.	S-37	International Mfg. Co.	825
Dodge Corp., F. W.	C-31		

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COMPANY	BOOTH NO.
Jackson & Church Furnace Div.	102-106
Jefferson Electric Co.	820
Jenkins Bros.	450
Jenn Air Products Co., Inc.	27
Johns-Manville Sales Corp.	702
Johnson Co., S. T.	822-824-826
Johnson Service Co.	42-44-46
Kaiser Aluminum & Chemical Corp.	S-32
Kaiser Co., E. B.	247
Kaustine Furnace & Tank Corp.	305-307
Kennard Corp.	C-30, C-32
Kent Co., The	447
Kewanee-Ross Corp.	43-45
Kinney Mfg. Co., Subsidiary of	
N. Y. Air Brake Co.	C-27, C-29
Kody Blower Co.	S-6
Korlund Co., Inc.	548
Kritzer Radiant Coils, Inc.	732
Lau Blower Co.	72
Lewis-Mathes Co.	709
Libbey-Owens-Ford Glass Co.	34
Lima Register Co.	74
Lipman Refrigeration Div.	
Yates-American Machine Co.	117
Lockformer Co.	731
McDonnell & Miller, Inc.	734

McQUAY

McQuay, Inc.	33
Magnaflow Pump Corp.	S-105
Magnetrol, Inc.	417-419
Maid-O'-Mist, Inc.	648
Manville Boiler Co., Inc.	440
Marathon Electric Mfg. Corp.	S-85
Marietta Metal Products Corp.	53
Marley Co.	325
Marlo Coil Co.	73-75
Marsh Heating Equipment Co.	37
Masmoth Furnace Co.	S-82
Maxitrol Co.	333
Mercoind Corp.	13
Metalbestos Div., William Wallace Co.	S-88
Metromatic Mfg. Co.	121-125
Metropolitan Refining Co., Inc.	C-38
Mid-Continent Metal Products Co.	710
Miller Valve Co., Inc.	320
Milwaukee Electric Tool Corp.	C-16
Milwaukee Gas Specialty Co.	444
Milwaukee Valve Co.	744
Minneapolis-Honeywell Regulator Co.	103
Mirror Patented Stove Pipe Co.	721
Mitchell Mfg. Co.	631
Modine Mfg. Co.	934
Monarch Mfg. Works, Inc.	810
Morris Sheet Metal Works	S-78
Morrison Products, Inc.	605
Morrison Steel Products, Inc.	140-148
Morse-Smith-Morse Co.	S-16
Morton Engineering Service, Paul S.	S-115
Mueller Climatrol	913-917, 921-925
Multi-Vent Div., The Pyle-National Co.	C-21
Muncie Gear Works, Inc.	C-14
Nash Engineering Co., The	400
National Heater Co., Inc.	S-10
National Heating Products Sales, Ltd.	S-74
National Radiator Co.	507
Nelson Div., Herman, American Air	
Filter Co., Inc.	C-118, C-116
Nesbitt, Inc., John J.	C-157, C-161, C-165, C-169
New York Air Brake Co.	C-27, C-29
New York Blower Co.	350
Niagara Blower Co.	513-517
Niagara Furnace Div.	
The Forest City Foundries Co.	C-44
Niagara Machine & Tool Works	706-708
Norman Products Co.	848, 947
Olsen Mfg. Co.	36, 57
Orr & Sembower, Inc.	800
Owens-Corning Fiberglass Corp.	S-42
Pacific Steel Boiler Div.	
U. S. Radiator Corp.	30
Paragon Electric Co.	717-719
Patten Co., J. V.	110
Patterson-Kelly Co., Inc.	909
Peerless Electric Co., The	410
Peerless Pump Div.	
Food Machinery & Chemical Corp.	723
Peerless Sales Div.	S-2, S-41
Penn Boiler & Burner Mfg. Corp.	C-115

PENN CONTROLS

Penn Controls, Inc.	23
Pennsylvania Furnace & Iron Co.	806
Perfection Stove Co.	18, 38
Perflex Corp.	532
Petro	2
Phillips Drill Co.	S-64
Pittsburgh Plate Glass Co.	
Fiber Glass Div.	748
Premier Co.	S-126
Powers Regulator Co., The	433-435
Prat-Daniel Corp., Thermobloc Div.	C-166
Preferred Utilities Mfg. Corp.	850
Primor Products, Inc.	S-21
Pullman Vacuum Cleaner Corp.	429
Quiet-Heat Mfg. Corp.	803
Quiet Kool Corp.	803
Quincy Stove Mfg. Co.	S-51, S-53
Quickdraft Co.	
Div. Herring-Hall-Marvin Safe Co.	S-77
R.C.S. Tool Sales Corp.	339
Radiant-Ray Radiation, Inc.	310
Radiant Utilities Corp.	217
Radio Corp. of America,	
Engineering Products Div.	S-84, S-86
Ralph Mfg. Co.	622-624
Randall Graphite Bearings, Inc.	65
Redmond Co., Inc.	608
Reflectal Corp.	
Subsidiary of Borg-Warner Corp.	326
Refrigeration & Air Conditioning	
Contractors Assn.	100
Remington Arms Co., Inc.	808
Republic Products Co.	S-57

COMPANY	BOOTH NO.	COMPANY	BOOTH NO.	COMPANY	BOOTH NO.	COMPANY	BOOTH NO.
Research Products Corp.	448	Sporlan Valve Co.	729	Thrush & Co.	C-63	Vulcan Radiator Co., The	409
Rheem Mfg. Co.	301	Spi-Rol-Fin Corp.	S-111	Titus, Inc.	747	Wagner Electric Corp.	834
Richmond Engineering Co., Inc.	S-68	Sprague Electric Co.	S-93	Titus Mfg. Corp.	750	Walker Mfg. & Sales Corp.	405
Richmond Radiator Co.	831	Square D Co.	S-94	Torrington Mfg. Co.	67	William Wallace Co.	
Ric-Wil Co.	606	Standard Stamping & Perforating Co.	344	Trane Co.	902-906-910-918	Metalbestos Div.	S-88
Ridge Tool Co.	S-44, S-79	Steel Products Engineering Co.	133	Trion, Inc.	76-78	Walton Laboratories, Inc.	C-13
Rittling Corp.	S-7	Stephens-Adamson Mfg. Co.	C-41	Tuttle & Bailey, Inc.	31	Waterfilm Boilers, Inc.	C-125
Roberts-Gordon Appl. Corp.	607-609	Stewart Mfg. Co., Inc.		XXth Century Heating & Ventilating Co., The	207	Waterman-Waterbury Co.	114
Rockwell Spring & Axle Co.		U. S. Machine Div.	111-113	Typhoon Air Conditioning Co., Inc.	650	Watts Regulator Co.	232
Timken Silent Automatic Div.	621-625	Strang, Carlisle & Hammond Co.	C-23	Union Asbestos & Rubber Co.	C-54, C-56	Wayne Home Equipment Co., Inc.	C-155
Rome-Turney Radiator Co.	741	Sturtevant Div.		Union Electric & Mfg. Co.	136	Webster Electric Co.	7
Roth Co., Roy E.	S-1	Westinghouse Electric Corp.	534-536	United States Air Conditioning Corp.	S-58-59	Warren Engineering Co.	S-118
Russell Co., F. C.	817		540-544	U. S. Electrical Motors, Inc.	C-162	Warren-Webster & Co.	414-418
Sarco Co., Inc.	213	Sunbeam Air Conditioner Div.		U. S. Radiator Corp.	8	Weil-McLain Co.	432
Schechter Bros. Co.	S-91	American Radiator & Standard Sanitary Corp.	20	U. S. Radiator Corp., Pacific Steel Boiler Div.	30	Westinghouse Electric Corp.	71
Sarcotherm Controls, Inc.	213	Sundstrand Engineering Co.	818	U. S. Register Co.	733	Wheelco Instruments Div.	
Scully Signal Co.	833	Sundstrand Machine Tool Co., Hydraulic Div.	231	U. S. Rubber Co.	S-40	Barber-Colman Co.	337
Sequoia Mfg. Co.	C-39	Sun-Ray Burner Mfg. Corp.	139	Universal Diffuser Corp.	439	White-Rodgers Electric Co.	64-66
Servel, Inc.	807-809	Surface Combustion Corp., Janitrol Heating & A-C Div.	15-17-19	Utility Appliance Corp.	635	Whitehall Engineering Co.	C-60
Shana-Mfg., Inc.	S-46	Synchronous Flame, Inc.	S-39	V & R Products, Inc.	821	Williams Div., Eureka Williams Co., Div. of Henney Motor Co., Inc.	835-839
Sieman Mfg. Co.	C-61	Synromatic Corp.	29	Vapor Heating Corp.	S-28	Windmaster Corp.	C-57
Sempaire	C-154	Taco Heaters, Inc.	518	Velan Engineering Ltd.	S-90	Wing Mfg. Co.	200
Skuttle Mfg. Co.	S-58	Tecumseh Products Co.	62	Velocity-Power Tool Co.	320	Worthington Corp.	948-950
Slant-Fin Radiator Corp.	S-125	Temco, Inc.	814	Vibration Eliminator Co., The	C-42	York Corp.	221-223-225-227
Smith Corp., A. O.	714	Thatcher Furnace Co.	508	Vibration Mountings, Inc.	S-24	York-Shipley, Inc.	S-50, S-89
Smith Co., Inc., The H. B.	321	Therm-O-Wheel, Inc.	S-102	Viking Air Conditioning Div., The National Radiator Co.	402	Young Radiator Co.	931
Sparkler Mfg. Co.	S-26					Young Regulator Co.	801
Spencer Heater	129					Zatko Metal Products Co.	S-15
Spencer Thermostat Div.						Zonalite Co., "Z" Crete Div.	118
Metals & Controls Corp.	50						

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New ... All-New Versatility with exclusive ADJUST-O-MOUNT!

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- Adjusts up or down, in or out, for any installation need
- Supported from sill or wall opening or rests on legs
- Makes Thru-Wall installation easier than ever
- A complete package, no extra ducts
- Self-contained thermostat
- Electric resistance heat

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- Takes 23% to 40% less window area
- Less than 50% floor area than any console
- In blond or mahogany for any decor

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3. Dual-Power Ventilation
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WHERE WILL YEAR-ROUND RESIDENTIAL AIR CONDITIONING BE SOLD?

Effect of Climate, Types of Dwellings, Available Fuels, Disposable Income Are a Few Factors To Be Considered In Market Analysis

Anyone who is in the residential air conditioning business doesn't have to be told that the "market" in this field is "different"—that such things as the Retail Sales and Buying Power indices can't be applied in the same way they can for other products.

Important thing, of course, is *how* the market for residential air conditioning is different, and exactly how it should be analyzed.

One man who has made a thorough study of this subject is John R. Hertzler, formerly vice president and general sales manager of York Corp., and now president of Hertzler Enterprises, Inc. (which is set up "to engage in refrigeration and air conditioning engineering, management consultation, market analysis, and forecasting").

From a number of his studies and published articles, Hertzler has prepared the summation published here that covers the factors involved in determining "Where will year-round residential air conditioning be sold?"

By John R. Hertzler, President, Hertzler Enterprises, Inc.

Now that air conditioning has been accepted as a business builder in commercial establishments, and is entering the stage of acceptance in the home which may make it a commodity, it behooves us to take a good look at the yardsticks we have been using for market development work, and refine them so that our future efforts become more productive.

We can be proud of our growth, but as we ascend the "growth curve," we can benefit from our experience, and make this a really profitable business for the contributing segments.

Need To Correct for Effect of Climate

Many factors in the industry have used Retail Sales distribution by Trading Areas effectively in the assignment of quotas, and in the application of promotional effort, to cultivate the market. It has

been necessary to correct for the effect of climate, which can be done in a number of ways.

This writer, with the help of Val Kartorie, market research director of York Corp., recommended the use of so-called "climatic factors" which were published (Reference 1) for each of the 3,000 counties of the United States.

They measured, not only the intensity, but the duration of summer discomfort due to the weather, as compared to the state of Florida—the country's most uncomfortable spot in the four summer months. The average summer discomfort of the country as a whole was shown to be about 50.9% of that of Florida, and sample states had summer climatic factors as follows: Texas—87.2%, Louisiana—96.3%, California—15.9%, Illinois—48.9%, New York—45.8%, District of Columbia—73.3%.

As might be expected in this

temperate zone in which we live, the states of greatest potential for the sale of summer air conditioning equipment, also represent a good market for the sale of heating apparatus. This merely adds up to the conclusion that there is an excellent market for a combined heating-cooling device, or what we identify as a year-round residential air conditioner.

And from the viewpoint of the marketing executive, Retail Sales, which served satisfactorily for quota assignment in developing a commercial market, could not be expected to fill the need for a base criterion in the measure of the residential market.

4 Broad Categories

The air conditioning business can be broadly classified in four categories:

1. Room air conditioners
2. Self-contained air conditioners, 2 hp. and above
3. Remote, or central station systems
4. Year-round residential air conditioning systems, including the central heat pump installation for residential duty.

The room air conditioner has a commercial, as well as a domestic application, and its sale to date, can be reasonably accurately measured by the usual indices of which retail sales distribution is an important element, provided a correction is made for climate. Self-contained air conditioners and remote systems both serve the commercial market directly, so that retail sales make an admirable base for measurement of coverage, and for future potential studies.

The Bureau of the Census 1950 Census of Housing, defines a dwelling unit so broadly that, while it is an excellent index for the potential sale of an electric range, or an electrical appliance, it does not, because of the concentration of apartment dwelling units in the Middle Atlantic Region, make it possible to use the dwelling unit as a base for the measure of future year-round residential units.

The apartment is not suited to the application of a central conditioner, under the control of the owner, with each apartment provided with its own individual unit for heating and cooling, on the pattern of the single family detached dwelling application. The inventory of dwelling units in a given state, or region, follows population, and disposable income of individuals, and these are fre-

quently used in measuring markets of products used in the home.

Single Family Dwellings

Analysis of the location of single family dwelling units in detached structures, however as reported in the Census of Housing, shows a distinct variation. Quality features of heating systems likewise do not follow population or disposable income patterns. Each residential area is a distinct and individual economy, conforming to its environment in terms of types of structure, physical features, climate, fuel availability, and other factors.

Reference 5, as enumerated at the conclusion of this article, is a detailed analysis of the market for year-round residential systems. Table 1, here reproduced, indicates each state's share of the market, based on a sample of 13 1/4 million occupied single family structures, as analyzed in the 1950 Census of Housing, and a supplementary study, Reference 4.

The analysis shows that the market in existing homes is divided 56.2% in houses equipped with warm air heat, both gravity and forced circulation types, 27.9% in houses equipped with "wet heat" systems, steam or hot water, and the remainder, 15.9% in houses of

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How States Look When Sized In Proportion to Potential Sales

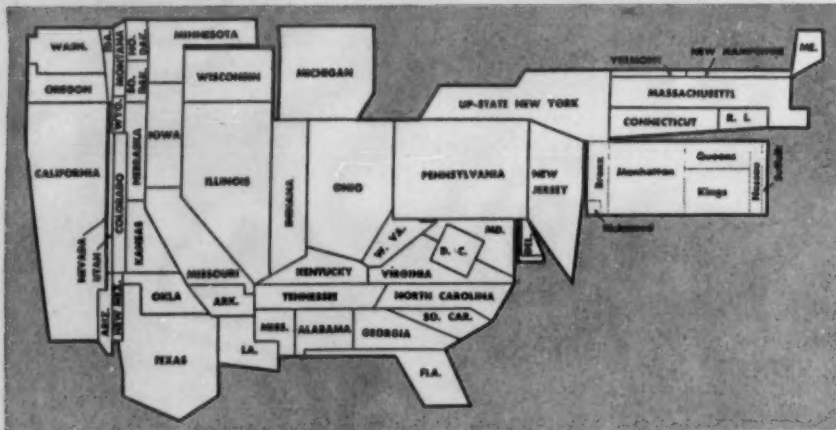


FIG. 1—States when sized in accordance with respective share of 1948 retail sales.

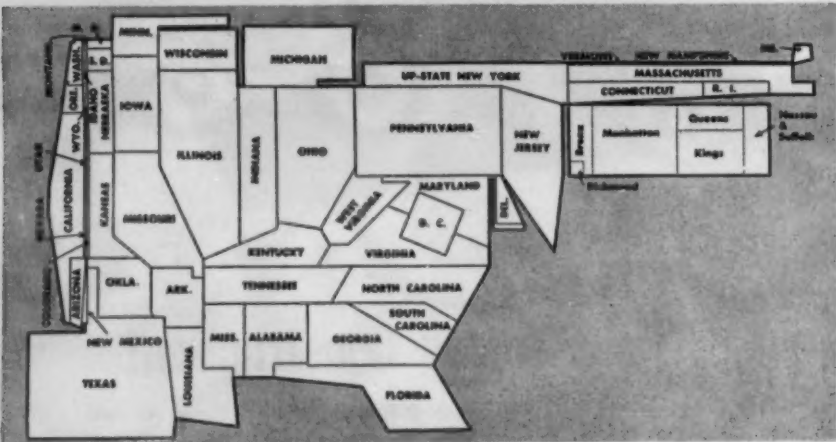


FIG. 2—Retail sales potential of states, distorted to show relative potential for sale of summer air conditioning equipment.

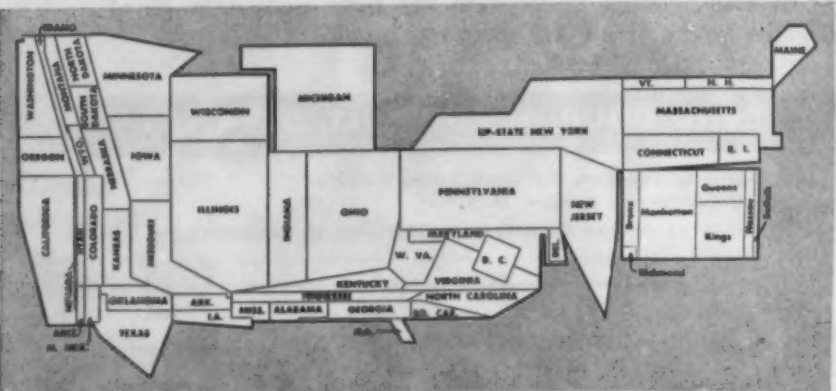


FIG. 3—Retail sales potential of states, distorted to show relative potential for sale of winter heating equipment.

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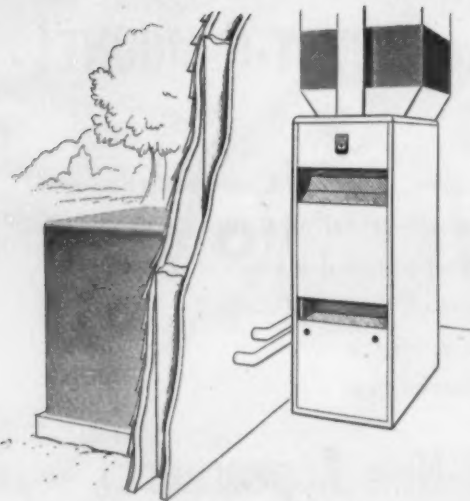
YOU CAN SELL 'EM ALL

COMPLETE TOP QUALITY

LINE OF SUMMER

AIR CONDITIONERS...

*air cooled... water cooled
...residential and
commercial*



NEW! AIR-COOLED REMOTE UNIT

Where water for cooling is scarce or water rates high, sell this new Sunbeam 2 or 3 hp air-cooled system. It uses no water whatsoever. The remote condensing unit is placed outside the building, and a few connections tie it in with the evaporator coil, which fits in the ductwork of the forced warm air distribution system. Floor space is saved, and the blower in the heating unit is utilized for cool as well as warm air distribution.

Sunbeam Air Conditioner Division, Dept. AC-513
40 West 40th Street, New York 18, N. Y.

Please send complete information on:

☐ Cooling ☐ Heating ☐ Air Filtering Units

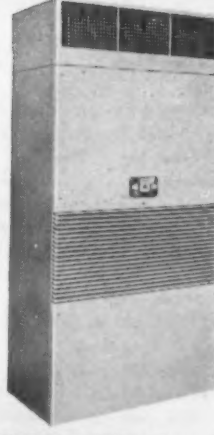
NAME _____

COMPANY _____

ADDRESS _____



RESIDENTIAL UNITS WITH BLOWER. Available in 2, 3 or 5 hp capacity, these complete packaged units control both temperature and humidity... remove excessive moisture from the air on humid days without over-cooling... can be manually controlled to provide air circulation when cooling is not required.



COMMERCIAL UNITS. These 2, 3 and 5 hp Sunbeam units have every feature required for perfect indoor climate control... plus attractive appearance that's an asset in business establishments. A 3-position selector switch is provided to turn the unit off, operate the blower and compressor, or operate the blower alone when cooling is not required.

Residential Air Conditioning Market--

(Concluded from preceding page)
more than \$7,500 value, which do not have central heating of any type.

In 1950, there were 46 million dwelling units, of which almost 40 million were urban and rural non-farm and 27.5 million dwellings were of the occupied one-family structure classification which are adaptable to central air conditioning.

Whether we refer to all types of dwelling units, or to one-family detached structures, more than one-half do not have central heating. Thus, any statement to the effect that central year-round air conditioning will become as prevalent as central heating is somewhat wide of the mark.

The study referred to evaluates a market in houses which do not have central heating. In an area where the heating season is but four months, the cooling season eight, houses are getting central heating for the first time—via the route of the addition of a winter heating coil to the summer air conditioner.

Farm dwellings should be considered a definite part of the market for year-round residential air conditioning. They represent somewhat less than 20% of the single family structures, so they are not a great enough proportion to have significant influence, and there is

no reason, in the light of improved farm economics, why the farmer should not enjoy the benefits of modern living, if specialty salesmanship plays its role.

While 56.3% of single family dwellings are without central heat, 82.1% of farm dwellings of the single family type, almost 4.5 million, lack this convenience. This is another reason not to overlook this segment of the market. The farmer is going to catch up some day, and whether by the route of the mail-order catalog, or otherwise, the electrification is bound to beget the enjoyment of more electrical appliances, and conveniences.

Coal Heated Houses Should Be Considered

Coal is still an important fuel for residential use, and the application of year-round air conditioning to coal-heated houses must be taken into account when developing the residential market.

Of houses with central heating, in both the warm air and "wet heat" categories, coal-heated houses outnumbered, in 1950, those heated by either gas or oil. True, the trend is away from the use of coal as a fuel, as the comparisons of 1940 vs. 1950 show, however, the more than 5 million coal-heated houses, 42.1% of single family dwellings with central heat, simply must be taken into consid-

eration. Here is where some air conditioning will be sold.

If there is any doubt as to the effect of the apartment dwellers on the market for residential air conditioning, look at Table 1, and note that Pennsylvania, and its number one position nationally, with 10.1% of the national potential, places it ahead of New York's 7.9%. Ohio is a strong 7.7%, whereas the 11 states comprising the Mountain and Pacific regions, total only 4.9% of the country's market.

Not too great an incentive to do a profound promotional job in the far west. In an industry of small manufacturers, such as the heating industry, 5% of the national market is big enough to support a company concentrating on a single region.

While the interest in residential air conditioning is diversified, let us not forget the application engineering that is required to fit the several components to the house to meet the individual requirements of the residence, its occupants, and owners.

Adequate electrical service must be supplied, plumbing connections must be made, and after the installation is completed, the occupant will expect, and demand, service to give him the results he thought he contracted for.

The residential system is certainly not a "shelf," or traffic appliance. The prospect may not know what he wants, so the sales

Residential Air Conditioning

Table 1—Year-Round Residential Air Conditioning Market In Occupied One-Family Structures

(Reported In Thousands, Corrected for Climatic Factor)

1. Sections and States	2. Type of Heating System			4. Totals Columns 1 + 2 + 3	5. U. S.
	Warm Air	Steam or Hot Water	Without Central Heating System*		
Total United States	3,691.0	1,830.3	1,041.8†	6,563.1	100.0
New England	93.7	194.5	14.9	303.1	4.6
Connecticut	35.3	58.6	5.4	99.3	1.4
Maine	5.9	4.0	0.3	10.2	0.2
Massachusetts	41.0	104.7	7.3	153.0	2.3
New Hampshire	3.6	3.5	0.2	7.3	0.1
Rhode Island	4.9	23.9	1.6	30.4	0.5
Vermont	3.0	1.8	0.1	4.9	0.1
Middle Atlantic	652.0	798.4	57.4	1,507.8	22.9
New Jersey	99.9	207.0	14.4	321.3	4.9
New York	213.7	282.9	22.9	519.5	7.9
Pennsylvania	338.4	308.5	20.1	667.0	10.1
East North Central	1,272.7	256.1	108.7	1,637.5	25.0
Illinois	300.3	108.7	31.4	440.4	6.8
Indiana	203.0	22.4	12.7	238.1	3.6
Michigan	243.3	47.9	20.8	312.0	4.7
Ohio	416.1	54.8	35.3	506.2	7.7
Wisconsin	110.0	22.3	8.5	140.8	2.2
West North Central	615.9	110.8	44.7	771.4	11.7
Iowa	175.9	22.9	10.0	208.8	3.2
Kansas	96.7	9.6	6.1	112.4	1.7
Minnesota	77.6	26.8	7.9	112.3	1.7
Missouri	177.0	39.4	16.0	232.4	3.5
Nebraska	67.3	8.5	3.7	79.5	1.2
North Dakota	6.4	1.4	0.3	8.1	0.2
South Dakota	15.0	2.4	0.7	18.1	0.2
South Atlantic	405.7	309.8	301.3	1,016.8	15.5
Delaware	15.1	11.9	9.2	36.2	0.6
District of Columbia	8.4	39.5	20.5	68.4	1.0
Florida	29.4	10.5	71.5	111.4	1.7
Georgia	59.5	12.7	32.1	104.3	1.6
Maryland	84.7	113.7	50.9	249.3	3.8
North Carolina	63.1	23.9	32.8	119.8	1.9
South Carolina	20.5	6.2	16.7	43.4	0.6
Virginia	70.5	78.3	48.4	196.2	3.0
West Virginia	54.5	15.1	19.2	88.8	1.3
East South Central	209.6	49.9	115.9	375.4	5.8
Alabama	44.2	8.7	29.0	81.9	1.3
Kentucky	78.1	15.0	31.2	124.3	1.9
Mississippi	18.0	8.1	16.2	42.3	0.6
Tennessee	69.3	18.1	39.5	126.9	2.0
West South Central	231.4	85.7	328.7	645.8	9.6
Arkansas	27.1	8.3	22.1	57.5	0.8
Louisiana	29.2	14.5	60.1	103.8	1.6
Oklahoma	63.7	9.9	42.4	116.0	1.8
Texas	101.4	53.0	204.1	358.5	5.4
Mountain	37.7	5.9	9.9	53.5	0.8
Arizona	12.8	2.1	4.4	19.3	0.2
Colorado	9.0	1.6	2.0	12.6	0.2
Idaho	2.8	0.3	0.6	3.7	0.1
Montana	3.2	0.5	0.5	4.2	0.1
Nevada	0.5	0.1	0.2	0.8	—
New Mexico	3.3	0.5	0.8	4.6	0.1
Utah	4.7	1.1	1.1	6.9	0.1
Wyoming	1.4	0.3	0.3	2.0	0.1
Pacific	182.3	19.2	60.3	261.8	4.0
California	149.7	15.4	51.2	216.3	3.3
Oregon	14.4	1.2	3.9	19.5	0.3
Washington	18.2	2.6	5.2	26.0	0.4

Notes:

*Limited to dwellings having value \$7,500 and over.
†Rural farm not available and not included; number of structures estimated to be less than 15,000.

Sources: 1950 Census of Housing, Volume I, Part 1, General Characteristics, Table 21, page 1-31 to 1-35; and special tabulations prepared for "American Artisan" published in "How America's Homes Are Heated," Copyright 1954.

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WITH SUNBEAM

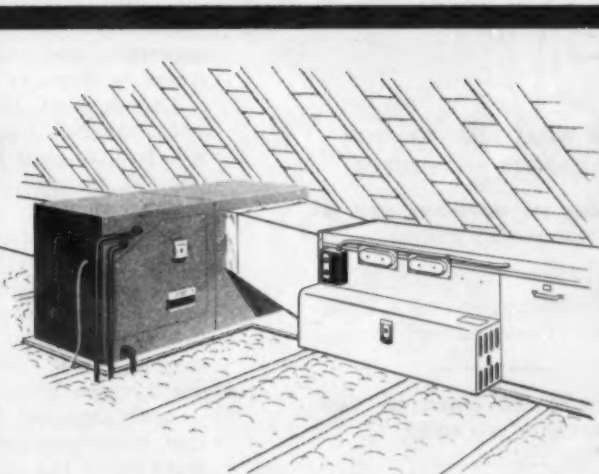
They're all A-1 prospects for Sunbeam cooling—just as they are for Sunbeam heating—big homes, small homes, stores, restaurants and dozens of other places where temperature comfort and humidity control are of top importance. Sunbeam has what it takes to turn this profitable business your way: a complete line . . . top quality at competitive prices . . . 5-year warranty on hermetically sealed refrigerant circuits . . . and

SUNBEAM COOLING SALES ENGINEERS ARE AT YOUR SERVICE

to help you solve technical problems, train your personnel and sell more installations. For full details, contact the Sunbeam distributor listed under "Air Conditioning Equipment" or "Furnaces" in your classified telephone directory, or mail the coupon below.

FULL LINE OF SUNBEAM WINTER AIR CONDITIONERS, TOO

Sunbeam Winter Air Conditioners satisfy every heating requirement, enabling you to sell 100% year 'round air conditioning by one manufacturer. You'll find it pays to feature Sunbeam's complete line—heating . . . cooling . . . air filtering units—all twelve months of the year.



NEW TUCK-AWAY HORIZONTAL COOLING UNIT

This versatile model, furnished in 2 hp or 3 hp, has dozens of applications where floor space or duct system cannot accommodate a conventional cooling unit. It can be installed overhead, placed on ceiling joists in an attic or suspended in crawl space under the floor. Makes an ideal combination with a winter air conditioner—uses same blower and air distribution system.

RESIDENTIAL ADD-ON UNIT WITH-OUT BLOWER. For homes already equipped with winter air conditioners, this Sunbeam add-on cooling unit makes it easy and economical to have summer comfort too, with only a moderate additional investment. Choice of three sizes—2, 3 or 5 hp—furnished less fan but with optional control sets to meet exact job requirements.



SUNBEAM



SUNBEAM AIR CONDITIONER DIVISION

American Radiator & Standard Sanitary Corporation

Serving home and industry: AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • HEWLETT BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

engineer will have to analyze his needs, explain the possible choices, and develop a meeting of the minds so that when the job is finished, it will be paid for by a satisfied customer-user, who will continuously retain his satisfaction to the extent of paying the operating costs, and whatever service charges are involved to maintain the equipment in good operating condition.

These things require a lot of people, for whom there is room in our growing industry. And before we are jumped by the merchandisers, there will always be a market for the room air conditioner, too.

(Reprints of the references listed at the conclusion of this story are available in limited quantity to

manufacturers or others with specific interest upon request to the writer addressed care of: Hertzler Enterprises, Inc., 915 Arlington Rd., York, Pa.)

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4. "How America's Homes Are Heated," "The Residential Heating Market" (Based on the 1950 Census of Housing) "American Artisan," Copyright 1954.
5. "Now That The Boom Is Here, Where Will Air Conditioning Be Sold?" "American Artisan," December, 1954.

Shana's
BIG LINE

is the
BIG NEWS

at the
BIG SHOW!

SHANA

America's most comprehensive
residential AIR CONDITIONING
line for 1955!

- AIR COOLED (waterless) and WATER COOLED!
- Greater profits
- Priced below competition
- Superior quality
- Ideal for any home in any state
- Performance proved sales plan

See the Shana exhibit, booth 3-46, 12th International Heating & Ventilating Exposition, Commercial Museum and Convention Hall, Philadelphia, Jan. 24-28.

If you won't be at the show, write for additional information today. Specify whether dealer, distributor or manufacturers representative.

Exclusive Territories Still Open
SHANA MFG., INC., 138 W. Randolph Chicago 1, Illinois

Preview

Published here is such "preview" information on what will be shown at the Heating & Ventilating Exposition in Philadelphia as was made available by the exhibiting firms prior to the opening of the Show.

It is published for two reasons: (1) to assist those who may read the NEWS before or while they are attending the Exposition in spotting certain things they may want to be sure to see; (2) to give readers not attending the Exposition some idea of the new products that are being made available for the heating and air conditioning field this year.

Photographic coverage of exhibits at the Show that will be of principal interest to NEWS readers will be published in issues following the close of the Exposition.

(Continued from Page 1)

to obtain them for the closing days of the Show week.

As something of a guide for those attending the Show, and a preview of "What's new in the industry in '55," for those who do not attend, the following preview is offered on some of the individual exhibits, from such advance information as was made available by the exhibiting firms.

A wide variety of "firsts" will be shown in the exhibit by Acme Industries. First showing of a new line of compact "Flow-Cold" cooling towers specially designed for the residential market will be one feature. Another will be cutaways of a larger cooling tower line—15 through 100 tons—also brand new.

A complete new line of condensers will also get its preview.

New Twin-Wheel direct-drive blower with motor mounted in the center of the blower housing and two blower wheels mounted on extended shafts from each side of the motor, will be featured by Air Controls, Inc.

The design is said to provide complete, free, unobstructed air flow. Center suspension of both motor and blower wheels insures well balanced loads on motor bearings and good air flow cooling.

A new Weather-Man regulator for controlling heat flow to multiple occupancy buildings, regardless of kind or type of heating system, will be featured by Automatic Devices Co., Inc. Unit is de-

signed to allow installation of the control mechanism indoors with only the temperature responsive bulb installed outdoors.

Included in the broad line of air conditioning and heating products that Airtemp will display will be a new "waterless" condensing unit, new compact units for all kinds of dwellings, water-cooled packaged equipment, and a central-station water chiller.

An articulated unit for air treatment for large industrial applications will be featured by Air & Refrigeration Corp. Display unit incorporates sloping coil design cooling and dehumidifying section.

Motors, starters, pumps, and V-belt drive equipment applicable to the field will be spotlighted in the Allis-Chalmers Mfg. Co. booth.

Over 20 products of American Air Filter Co., Inc. will be shown in the company's largest trade show effort.

New products will include the Roll-o-matic, an automatic filter using a 70-ft. roll of spun glass, and the Herman Nelson Amervent, a heating, ventilating, and cooling unit for classrooms. Also the Herman Nelson console heater and unit blower.

A new line of self-contained air conditioners will be announced by American Coils Co. Units will be available from 3 through 20 hp.

Other products on display will be the "Comfortaire" heat pump and forced draft convectors.

Novelty interest of the American-Standard exhibit centers around

a puppet show called "The Heat's On," intended to inform the heating contractor of what is being done by American-Standard to make the home builder more conscious of quality hot water heating.

On display will be a representative line of air conditioning and hot water heating products including a cutaway cabinet for a 2-hp. chiller unit.

A gauge to indicate when air filters need changing will be one of the features of the Bacharach exhibit. Three other instrument lines will share the spotlight—the "Fyrite" line of combustion testing instruments; "Tempscribe" temperature and operation time recorder; and "Florite" air velocity meter.

Introduction of new lines of water saving heat transfer equipment including new features is being planned by Baltimore Aircoil Co., Inc.

All types of electric and electronic controls and air distribution products for heating, ventilating, and air conditioning will be shown by the Air Distribution and Automatic Controls divisions of Barber-Colman Co.

A portion of the Air Distribution Div. display will be devoted to high velocity air distribution equipment.

A shadow-box arrangement of a number of cooling tower installations used for homes, business, and industry will be a feature of the Binks Mfg. Co. display. There will also be an operating display of a residence cooling tower and a small commercial size tower.

A 2-hp. air-cooled air conditioning unit complete with a 100 HG gas-fired hi-boy furnace will be spotlighted by Bonair Products Co. These are units being used in the 1,200-house Lawrence Park project in suburban Philadelphia.

A new all water year-round air conditioning package for homes that provides heating and cooling using a "one pipe system," will be the highlight of the Brown Products Co. booth.

Also on display will be "Bayce-Heet" baseboards and fin-tubes, convectors featuring a removable front panel, and a compact boiler.

WATER SAVERS USE COPPER

A new line of water savers featuring all copper water surfaces and a new concept of design will be featured by Bush Mfg. Co.

Also on display will be multi-zone units; under-the-window units; convector radiators, baseboard radiation, and finned radiation for commercial, industrial, and institutional use; blower condensers; and air conditioning, steam, and water coils.

The rerated line of fractional and integral horsepower motors will be displayed by Century Electric Co. In addition, a new three-speed capacitor type motor designed for the fan and blower industry will be exhibited.

New 1955 model oil burner will be specially featured by Century Engineering Corp. In addition, the company will display its oil and gas furnace line.

A transparent housing so that the interworkings of the backward curve fan can be seen will be a feature of the fan exhibit by Champion Blower & Forge Co.

Items of interest to visitors at the Chicago Blower Corp. booth will be a new centrifugal airfoil fan; introduction of a packaged "Spid" (packaged steel plate induced draft fan for small boilers); an X-1000 experimental research centrifugal blower; a belt-driven packaged "MD" fan (ventilating set); a belt-driven axial airfoil fan; a mushroom power roof exhaust; a turbo pressure blower capable of producing 20 oz. of pressure; and introduction of a new cast-iron direct-connected "MD" applicable for low volume low pressure exhaust or supply.

A complete line of Cutler-Hammer motor control and motor switches for the control of fans, blowers, pumps, and air condi-

tioning equipment will be on display. Spotlighted will be manual and magnetic starters and regulators, pressure switches, float switches, thermostats, electric heaters, and small motor switches.

An induced draft bifurcator fan will be one of the items of interest to visitors to the Debothezat Fan Div. booth. Fan is a motor-driven axial-flow fan in a divided housing. Motor is in an isolated chamber around which flue gases are by-passed.

Display of the complete line of oil-fired heating equipment is being planned by Delta Heating Corp. Conventional furnaces, hi-boys, lo-boys, counterflows, and suspended will be on view, as well as the gun-type floor furnaces. Emphasis will be placed on the direct oil-fired unit heater available now in sizes from 112,000 B.t.u. per hour up to 280,000 B.t.u. per hour.

Electric motors for use on air conditioning pumps, pedestal fans, exhaust fans, rotary oil burners, unit heaters, cooling units, and variable speed drives will be displayed by Doerr Electric Corp. New products will include a motorized gear reducer and a pancake type motor for use in roof ventilators.

PUSHBUTTON OPERATION

A visual display, with audience participation, will be used by Du Pont's "Kinetic" Chemicals Div. to explain safety and quality manufacturing standards of its "Freon" refrigerants. Pushbutton operated displays will enable visitors to test the non-flammable properties of the "Freon" compounds by extinguishing flames and noting the speed with which temperatures can be dropped when liquid "Freon" is released from pressure and changes into a gas.

A new line of electronic air cleaners, "Built-up Line," "Custom Line," and "Compact Line" for commercial and residential use will be displayed by Electro-Air Cleaner Co.

Announcement of the "Rotodynamic," a self-cleaning, centrifugal type air cleaner that operates with constant high efficiency over a wide range of test concentrations and loads is being made at the show by Farr Co.

Also to be shown is a Far-Air self-washing filter displayed on a revolving table; standard panel filters in 1-in., 2-in., and 4-in. thicknesses; grease eliminator restaurant equipment; and a new automatic flush valve.

"Dynapump," featuring a newly-designed rubber mounted flange and other new improvements, will be exhibited by Fostoria Pressed Steel Corp. Dynapump is designed for use on hot water heating systems and can be used as a fractional horsepower circulator or booster pump.

An "Eclipse" compressor with cylinders cutaway and the working parts kept in slow motion, a 5-hp. unit air conditioner, plus a new square-finned coil, frosted by a small hermetic refrigerating unit will be a major part of the exhibit planned by Frick Co. Machine parts, valves, fittings, and controls will also be displayed.

A heavy-duty, line voltage type room thermostat will be in the spotlight in the Fulton Sylphon Div. booth, along with several new instruments and controls. Two new valves and two water mixers will also be featured.

Feature of the General Electric Commercial & Industrial Air Conditioning Dept. display will be packaged air conditioners for stores, offices, and factories in which the entire refrigeration machine including compressor, motor, and condenser are sealed in steel and are said to be lubricated for life.

A heat pump of the air-source type will get the spotlight in the General Electric Co., Weathertron Dept. booth. The heat pump cools without water and heats without burning fuel. It automatically reverses itself to provide heating or cooling as required.

(Continued on next page)



It's great to be a Carrier Room Air Conditioner Dealer!

Because Carrier Distributors are extra helpful!

Not one of our Carrier Distributors would ever literally "light a fire" under a prospect. But they know plenty of other ways to put the heat on a customer! They're loaded with air conditioning sales savvy! You see...

Carrier Distributors know air conditioning!

These men grew up in the air conditioning business! Twenty-five of them have been associated with Carrier for more than twenty years... nearly sixty of them for ten years! They're the industry's most experienced distributors! And when you deal with them...

You have the Carrier name to sell!

Carrier doesn't make light bulbs, TV sets or phonograph records—

just air conditioning! They're the people who know air conditioning best! And Carrier Room Air Conditioners show it... from slim silhouette styling to the weather-armor cabinet... from corrosion-proof coils to the exclusive cooling reservoir!

Want to know more about the Carrier Room Air Conditioner...and what it's like to be a Carrier Dealer?

We've made up a special issue of a magazine that's usually reserved for Carrier Dealers only... "Inside Carrier." It's packed with selling ideas and plans for 1955... plans which you should know about!

Mail coupon for GIANT "Inside Carrier"!

LOOK WHAT YOU GET FROM THE CARRIER DISTRIBUTOR!

- Financing and warehousing plans to ease your inventory problems!
- Four retail financing plans designed to make payments painless!
- Advertising and promotional plans custom-built to your needs!

LOOK AT THE PRODUCTS YOU HAVE TO SELL!

The Carrier Room Air Conditioner illustrated below has universal appeal! Carrier was first with "multi-mounting." You can install the new 1955 Carrier almost flush with the sill, you can install it in basement, casement, wall, or even through a transom!



Carrier air conditioning • refrigeration • industrial heating
CARRIER CORPORATION
310 S. Geddes St., Syracuse, New York

I want that GIANT Room Air Conditioner issue of "Inside Carrier" and the name of my nearest Carrier Distributor. I'd also be interested in finding out more about:

☐ Carrier Residential Weathermakers ☐ Carrier System Weathermakers
☐ Carrier Self-contained Weathermakers ☐ Carrier Roommakers

Name _____
Street _____
City _____ State _____

Preview

(Continued from preceding page)

A complete line of centrifugal pumps which feature a small low-cost unit to be used with cooling towers will be the major attraction of Goulds Pumps, Inc.

First of two new styles of cooling towers by Halstead & Mitchell is a "Take-Apart" tower which is designed to be easily taken apart for installation in difficult places. Second line of cooling towers features centrifugal fan units, to be used where quietness of operation is of maximum importance.

A cooling unit that is said to have a capacity of 5 to 7 tons but uses a 3-hp. compressor is to be shown by Hastings Air Control.

CHILLER READY FOR PLUG-IN

A completely packaged chiller unit, "Freon"-charged, ready for "plug-in" operation will be highlighted by Heat-X, Inc.

An array of 20 Moncrief furnaces and air conditioners, plus Moncrief "Surefit" duct, pipe, and fittings will be presented by Henry Furnace Co.

Operating display of Aircooustat, a packaged unit for silencing fan and air noise in air conditioning systems, will point up noise reduction effectiveness.

"Blue Dot" lever type Tube Bender, which will bend both hard and soft tubing, is among the new products which will be featured by Imperial Brass Mfg. Co.

Another new product which will be displayed is the "Magic Eye" liquid indicator.

Centrifugal Pumps of many sizes and types of construction will be part of operating exhibits on circulation of cooling water and brine solutions, planned by Ingersoll-Rand.

An operating display of the "Selectemp" heating system which features a thermostat in every room will be offered by Iron Fireman Mfg. Co. Also included in the display will be gas and oil burners, residential oil and gas furnaces, a central cooling unit.

A demonstration by two girl models on a 20-ft. wide raised platform will be highlighted by the Janitrol Div., Surface Combustion Corp. At the conclusion of the demonstration, one of the girls will remove from an electric furnace a sample of the Janitrol Dura-tube heat exchanger that has been heated to 1,200° and will quench it in water.

Transite ducts and vents will be part of the display planned by Johns-Manville.

In addition to the regular line of copper water tubing and copper refrigeration tubing, brass and copper condenser tubes, and wrought and cast sweat fittings, Lewin-Mathes Co. will exhibit a special miniature draw bench where seamless copper tubing will be drawn.

A new automatic pushbutton control on the Lima perimeter extended baseboard diffuser will be shown for the first time by Lima Register Co.

A complete line of heating specialties, including radiator valves, traps, float and thermostatic traps, and vents, and a complete line of refrigeration instruments, including the new Marsh "F-12" and "F-22" gauges will be a feature of the Jas. P. Marsh Corp. exhibit.

CONDENSERS CAN BE BANKED

An "Aircon" air-cooled condenser will be spotlighted by McQuay, Inc. The new condenser will be available in 2, 3, 5, 7½, 10, and 15-ton models. Units are said to be so constructed so that they can be banked up to provide 20-ton and larger sizes in regions where water is scarce.

A center guided, shockproof, silent flanged check valve to eliminate shock (water hammer) from pipe lines and to eliminate any loss of head when the pumping system shuts down for any reason will be featured by Miller Valve Co., Inc.

A wireless thermostat, said to be the first of its kind ever built, and an electronic temperature control system whose amplifier uses transistors instead of vacuum tubes are top features of the Minneapolis-Honeywell Regulator Co.'s display.

Products to be exhibited by C. A. Olsen will demonstrate the complete Luxaire line of: year-round, combination air conditioning units, summer cooling units, basement winter air conditioning units, utility room air conditioning units.

A new line of Sun Fuel-Master combination heating-cooling units will be offered by J. V. Patten Co. Furnaces and air conditioning units will have cross connected collars for a single plenum on the discharge side of both units and the return air will also be cross connected, utilizing the furnace filters.

Completely redesigned models Aqua-Saver cooling towers will be unveiled by Peerless Sales Div.

Items of particular interest to visitors at the Penn Controls exhibit will be: year-round air conditioning controllers (all functions are in one compact enclosure); a brand new combination heating-cooling thermostat; and Penn's standard residential cooling and heating controls and controls for commercial cooling.

A first time exhibitor is Fiber Glass Div., Pittsburgh Plate Glass Co., which will feature its line of superfine fiber glass duct insulation and will also show a complete range of its Glasfloss air filters.

A low-cost add-on unit is being displayed by Quiet-Heat Mfg. Co. Features include: quiet performance with maximum cooling.

Principal item of interest in the Research Products Corp. booth will be the "EZ Kleen" filter. Another new item currently on a limited market basis is the "Aprilaire" automatic electric humidifier.

A glass-enclosed operating unit showing function of the DUT water chiller and an open view of the 5-ton gas "All-Year" air conditioner will be shown by Servel, and also various models of the "Super-matic" power unit.

Four new products are planned for display by Spencer Thermostat Div. They are: inherent overheat protection for three-phase and shaded pole motors, potential type starting relays, and miniature hermetically sealed thermostats.

In addition to a complete line of heating pump specialties such as float and vacuum switches, electrical and mechanical alternators, Square D will emphasize a new line of magnetic starters in size 0 and 1.

On display for the first time will be the completely new Tecumseh air conditioning line for year-round and window air conditioner applications. This new line includes air or water-cooled hermetic compressors adaptable for year-round or furnace applications from 1½ to 5 hp. and 2 and 3-hp. air-cooled highsides.

Demonstrations of versatility and performance of Airfoil grilles under varying conditions will be a feature of the Titus Mfg. Corp. display.

Center of attention in the Trane Co. exhibit is expected to be the company's centrifugal compressor, the 300L CenTraVac, with a 400-ton load capacity. In addition, a new Climate Changer line will be shown as well as new UniTrane and KB unit ventilator lines.

Introduction of a series of three basic permanent, cleanable, filter types will be made by Trion, Inc.

Medium and high pressure air distribution units, including type MPW periphery wall unit, and a cutaway version of the type MPD ceiling diffuser unit will be featured by Tuttle & Bailey, Inc.

Two new models of "Convert-to-Cool" air-cooled residential conversion unit will be shown for the first time by Typhoon Air Conditioning Co., Inc. New models will be available in 2 and 5-hp. sizes.

Like the 3-hp. model, the new units will consist of two separate sections—the cooling coil and the air-cooled condensing unit.

First showing of the "Dual-Vector" which provides year-round air conditioning by means of forced hot and chilled water will be made by Union Asbestos & Rubber Co. Another "first" sharing the spotlight will be new self-contained, water-cooled packaged air conditioner to be called "Royal-Aire."

Laboratory demonstration of an automatically controlled Type "R" Flexiflo air diffuser will be a feature of the Universal Diffuser Corp. exhibit.

A newly-designed "Modu-Aire" will be shown for the first time by United States Air Conditioning Co. Other new products will be a combination heating-cooling unit and a "Kooler-aire" air-cooled condensing unit.

A mobile display of the Universal duct blower will be featured by Viking Air Conditioning Div. The display will show how the blower can be installed in ducts to discharge at any standard position.

Newly designed humidifier model WF for warm air heat will have a spotlight in Walton Laboratories' exhibit. This new unit features humidification without the use of evaporator plates, jets, nozzles, or other forms of surface evaporation.

A gas-fired hi-boy winter air conditioner which is being added to Waterman-Waterbury's line will be featured in its exhibit. Also on

display will be a lo-boy oil-fired winter air conditioner and the "Comfortrol" system.

A combination year-round air conditioner, new SU-Unitaire for commercial and industrial applications, heat pump, and compressors and other air conditioning equipment will be on display by the Air Conditioning Div. of Westinghouse Electric Corp.

Electronic combustion safeguard systems for oil and gas-fired furnaces, ovens, boilers, kilns, and dryers will be introduced by Wheelco Instruments Div., Barber-Colman Co.

Theme of the Worthington exhibit will be "Climate Engineers to Industry, Business, and the Home." In addition to a packaged chiller for large installations and a packaged air conditioner for commercial uses, Worthington will show its complete residential air conditioning and heating line. Most important is the introduction of Worthington's new waterless air-cooled equipment.

Displayed for the first time will be York's new turbo water cooling system and the new remote air-cooled year-round residential conditioner. The turbo compressor is said to be a new design and has an application up to 300 tons of refrigeration. The remote condenser section on the year-round air conditioner will be a hermetically sealed system containing two 1-hp. hermetic compressors.

Two new products along with the regular line of heating, cooling,

and air conditioning products will be shown by Young Radiator Co. On display will be the "Roomaire" conditioner, a new remote type room air conditioning unit, and "Permaheat" baseboard convectors. Roomaire conditioners are designed to provide year-round conditioning of individual rooms in multi-room installations. Permaheat baseboard convectors are designed to meet requirements of architects and engineers.

The new Frigidaire "Multi-matic" residential air conditioners that can be added to any present warm air heating system will be displayed in 2, 3, and 5-ton sizes. Also to be shown will be a cutaway of the "Master-matic" air conditioner, and the complete line of Frigidaire 1955 window-type room air conditioners.

A 10-ton package store cooler, a 15-ton air handling unit, and a 30-ton self-contained multi-zone air conditioner are the three principal pieces of equipment that will be in the Governair Corp. display. The 10-ton package cooler features two completely independent 5-ton refrigerating systems, with one power and control panel.

The 15-ton air handling unit is arranged as a vertical cabinet complete with direct expansion coil, external face and by-pass dampers in combination with filters and filter rack. The 30-ton self-contained multi-zone conditioner includes two independent 15-ton refrigerating systems, and provides modulating control.



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What's new in water cooling? Just stop by the Marley booth at the A.S.H. & V.E. show, and you'll see!

You'll see Marley's new AquaCooler for residential and commercial service. You'll see the new "Packaged" Double-Flow Aquatower — a new intermediate-capacity tower that can be installed with all the ease of smaller packaged towers. And, chatting with Marley representatives, you'll hear about other revolutionary Marley plans and products.

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We'll see you at booth 325 and show you what we mean!



The Marley Company

Kansas City, Missouri

What Happened To Residential Air Conditioning In Cincinnati During 1954

It Began To 'Snowball' In This 'Borderline' City Where 567 Installations Were Made by 35 Contractors Included In Survey

By C. Dale Mericle

CINCINNATI — Residential air conditioning is beginning to "snowball" here.

A total of 567 such installations in 1954 are accounted for in a survey just completed by AIR CONDITIONING & REFRIGERATION NEWS, a figure believed to represent more than 90% of the total for the year.

And one distributor has signed an order from a dealer for 300 residential units scheduled to go in during 1955.

As in recent News surveys aimed at finding out what was actually happening in the booming residential air conditioning field in various cities, the NEWS queried distributors and contractors serving Cincinnati to determine what type of homes were buying air conditioning, the type of dealer or contractor selling and installing it, and type of units going in.

The questions were similar to those asked previously in Wichita, Kan., Fort Worth, Memphis, and Minneapolis.

(Results of these surveys appeared in the NEWS in the issues of Oct. 18, Nov. 8, and Nov. 29, 1954, and Jan. 10, 1955, respectively.)

Cincinnati Described as 'Borderline' City

In a survey of air conditioning Cincinnati provides an interesting study because it is a "borderline" city, points out the leading distributor.

In using the term "borderline" he refers to the policies of national concerns who maintain offices or stores in Cincinnati.

About half of these national organizations, he says, consider air conditioning as a "must" in Cincinnati and points south, while the others believe air conditioning is necessary only south of Cincinnati.

Of the 567 residential systems installed in Cincinnati during 1954 a total of 231, or approximately 41%, went into existing homes—a market believed by many experts to offer the largest ultimate potential.

There were 336 installations in new homes.

Of these, 146, or 26% of the over-all total, were installed at the decision of the buyer of the home, while 190, or 33%, were installed by the builder on a speculative basis.

The latter figure is in sharp contrast to the results obtained in the four previous surveys made by the NEWS where relatively few installations by speculative builders were encountered.

Reasons for this contrast may be twofold. Speculative builders in the Cincinnati area, say local distributors and dealers, are generally very much interested in air conditioning, interested enough to install it on a speculative basis. Builders in the other cities visited were more hesitant about actually buying and installing air conditioning systems before they had a customer for the house.

It is possible, too, that the phrasing of the question on this point as asked in Cincinnati may have elicited a more accurate answer than the question used in the previous surveys.

In the first three surveys dealers and distributors were asked how many jobs went into "speculative projects." Although effort was made to explain that the NEWS was more interested in the "speculative" than the "project" meaning of the term, it is possible that use of the word "project" brought

The story published on these pages is one of a series on just what is happening to residential air conditioning in a number of areas in the country.

There has been a great deal written about the future of the market for residential air conditioning systems, but remarkably little about what has actually happened in the sale and installation of such equipment.

In order to present a factual picture of the number and kind of systems that have been sold, and the type of businesses that have done the selling and installing, the NEWS sent Associate Editor C. Dale Mericle into some of the areas that have been good markets—active areas such as Wichita, Kan.; Fort Worth, Texas; Memphis, Tenn. These areas have long summers and mild winters, a natural for residential air conditioning.

Following these areas Mericle reported on Minneapolis, which is famous for its zero temperatures. His latest survey, presented on these pages, is from Cincinnati, which is described as a "borderline" city by one of the contractors interviewed.

Instructions were to report as completely as possible on just what did happen in residential air conditioning in these areas. Mericle's reports on the southern areas were published in the NEWS Oct. 18, Nov. 8, and Nov. 29. In the Jan. 10 issue conditions in Minneapolis were described.

to mind in some cases extensive new home "developments" rather than single homes or scattered homes built on a speculative basis.

Not having installed air conditioning in any such large "developments," dealers and distributors in the first three cities surveyed may have omitted some installations put in by the builder on speculation. It's doubtful, though, that there was any substantial number in this class.

Was Decision Made by Builder or Buyer?

In the Cincinnati survey, the distinction between new home installations where the new home buyer made the decision to install and where the builder made the decision was very carefully spelled out.

As in the previous surveys, dealers and distributors were questioned on the number of the residential jobs that were air cooled as compared with those put in with water-cooled condensers.

Of the 567 installations, 106 were air cooled while 461 used water-cooled condensers.

Some firms installed a substantial percentage of air-cooled systems. Contractor No. 5, for example, put in 21 air-cooled jobs compared to nine with water; contractor No. 6 had 12 air cooled and 14 water cooled; contractor No. 11 had nine air cooled to one water cooled. Some contractors installed only air-cooled systems.

How Many Cooling Towers?

An effort was also made in the Cincinnati survey to determine how many of the water-cooled jobs were equipped with cooling towers or some other form of water-saving device.

It was impossible to arrive at an accurate figure in every instance, but on the basis of the data that was obtained, it is estimated that at least 100 cooling towers were installed. Three evaporative condenser installations were noted.

Many of the water-cooled systems installed without towers did not dump the discharge water down the sewer but piped it to sprinkle lawns.

One distributor has advised his dealers to stress this point, especially with the buyer of a new home who usually has the problem of developing a lawn from scratch. "Warm discharge water from the condenser really makes grass grow fast," he emphasizes.

This same distributor is also planning to make available a conversion kit permitting contractors to change systems from water cooling to air cooling—"after the new lawn is in good shape."

20 Different Makes Represented

Twenty different makes of air conditioners are represented in the 567 Cincinnati installations. Of these 10 were produced by manufacturers of air conditioning and refrigeration equipment while 10 bore the nameplates of firms better known as furnace manufacturers.

The 10 air conditioning manufacturers, however, were found in 358 installations, or 63% of the jobs, while the 209 units of furnace manufacturers represented 37% of the jobs.

One make dominates the field in Cincinnati, recording 203 installations in 1954 to gain 35% of the entire residential market. This is an old-line air conditioning manufacturer.

Another old-line manufacturer of air conditioning and refrigeration is represented by 51 installations, or 9% of the jobs.

Largest number of jobs for any one furnace manufacturer was 75, which is equivalent to about 13% of the installations.

Although old-line air conditioning manufacturers dominate the Cincinnati residential picture, it's the heating contractor who's putting in the great bulk of the installations.

A total of 434 jobs was installed by heating contractors, including plumbing and sheet metal firms, compared with 68 by eight air conditioning contractors.

(Continued on next page)



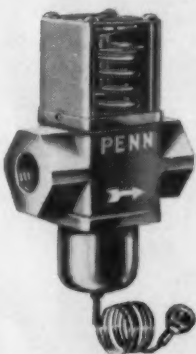
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Type 873 two-wire cooling thermostat for low or line voltage pilot service.

Series 246 water valve in sizes from 1/2 to 2 1/2" for use with all refrigerants.



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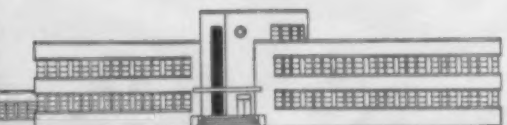
Series 275 oil protection control for all pressure-lubricated refrigeration compressors.



Series 325 time-pressure defroster automatically varies defrost time for any load condition . . . avoids shut-down time.



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Residential Air Conditioning In Cincinnati

Contractor	Total 1954	Existing Homes	New Homes Owner	Builder	Air Cooled	Water Cooled	With Tower
1	80	10	10	60	8	72	Some
2	60	60	...	...	6	54	Some
3	40	10	5	25	4	36	Some
4	35	8	15	12	...	35	9
5	30	24	3	3	21	9	Some
6	26	7	13	6	12	14	4
7	21	5	16	...	...	21	20
8	20	...	...	20	2	18	Some
9	16	4	12	...	...	16	Some
10	12	6	6	...	5	7	7
11	10	2	5	3	9	1	...
12	9	4	5	...	...	9	5
13	8	4	4	...	...	8	4
14	6	4	2	...	...	6	2
15	6	2	2	2	6	...	...
16	5	4	1	...	...	5	2
17	5	5	...	...	...	5	...
18	4	4	...	...	4	...	...
19	4	4	...	...	...	4	...
20	4	4	...	...	4	...	...
21	4	4	...	...	4	...	...
22	3	3	...	...	3	...	...
23	3	3	...	...	...	3	...
24	3	3	...	...	...	3	...
25	3	3	...	...	3	...	...
26	3	3	...	...	...	3	...
27	3	1	1	1	3	...	...
28	2	...	2	...	...	2	...
29	2	2	...	...	2	...	...
30	1	...	1	...	...	1	*
31	1	...	1	...	...	1	*
32	1	1	...	...	...	1	...
33	1	...	1	...	1	...	...
34	1	...	1	...	1	...	...
35	1	...	1	...	...	1	*
Distributor							
A†	74	8	13	53	...	74	7
B†	29	20	9	...	...	29	3
C†	18	3	14	1	...	18	Most
D†	8	1	3	4	8	...	...
E†	5	5	...	...	...	5	...
Total	567	231	146	190	106	461	100†

*Evaporative condenser.

†Distributor A's units were installed by "12 to 15" heating dealers.

Distributor B's units were installed by eight heating dealers. Distributor C's units were installed by 12 heating dealers. Distributor D's units were installed by two heating dealers. Distributor E's units were installed by three heating dealers.

‡Estimated.

Cincinnati Home Air Conditioning--

(Continued from preceding page) ditioning and refrigeration contractors, 60 by a specialty type dealer, and five by two electrical contractors.

Virtually all the heating dealers install their own ductwork, but they don't necessarily operate their own sheet metal shop. There is a definite trend in Cincinnati among heating and air conditioning dealers to obtain both standard and custom sheet metal items from local sources specializing in this operation.

Because most of the contractors listed in this survey are heating firms, only the exceptions will be noted here:

Contractor No. 2 (60 units) is a specialty dealer. Sublets ductwork.

JUST ASK US!

Turn to "What's New" Page for useful information on new products.

Contractor No. 5 (30 units) is an air conditioning contractor. Does own ductwork.

Contractor No. 10 (12 units) is an air conditioning contractor. Sublets ductwork.

Contractor No. 14 (six units) is an air conditioning firm. Installs own ductwork.

Contractor No. 16 (five units) is an air conditioning and refrigeration contractor. Sublets ductwork.

Contractor No. 17 (five units) is an air conditioning contractor. Does own ductwork.

Contractor No. 18 (four units) is an air conditioning and refrigeration firm. Sublets ductwork.

Contractor No. 20 (four units) is a refrigeration service firm. Sublets ductwork.

Contractor No. 21 (four units) is an electrical contractor. Sublets ductwork.

Contractor No. 28 (two units) is an air conditioning and refrigera-

Residential Air Conditioning

tion contractor. Sublets ductwork.

Contractor No. 30 (one unit) is an electrical contractor. Sublets ductwork.

All the other contractors, including those listed (but not identified) by five distributors, are heating firms.

It is of more than passing interest, however, to note that contractors No. 1, 2, 3, and 8, with a combined total of 200 installations, are heating contractors representing the same make—that of an old line air conditioning manufacturer.

The distributor for this line has taken a most active interest in the residential field and has a man with broad sales experience in the appliance field specializing in this phase of the distributorship operations.

Just exactly how many contractors or dealers were active in the Cincinnati residential air conditioning market in 1954 is difficult to determine. Data for this survey was obtained by personal interviews and telephone calls to both distributors and contractors or dealers.

It will be noted in the accompanying table that 35 individual contractors are listed. In addition, there are five distributors shown.

These latter, in most instances, declined to reveal the names of their dealers. Attempts at cross-checking with the dealers directly quickly proved futile as a number of such dealers serviced by these distributors apparently operate out of their own homes and do not have listings in the classified section of the Cincinnati telephone book.

There is every reason to believe, however, that many contractors install more than one make of equipment. Therefore, the number of dealers active was probably somewhere between 35 and 75. The latter figure is the total of the 35 individual contractors listed plus the number of dealers given by each of the five distributors.

It is probable that 1955 will see even more contractors active in the residential field. A number interviewed who said they had made no installations in residences up to now are definitely planning to explore this growing new market this year. Some of these contractors hope to do more than just "get their feet wet," it was indicated.

Nothing unusual in the way of service problems with residential air conditioning installations was reported in the Cincinnati survey.

Marks Joins Timken as National Sales Manager

JACKSON, Mich.—Timken Silent Automatic Div., Rockwell Spring & Axle Co. here, has announced the appointment of Louis Marks as national sales manager.

Timken manufactures central heating and air conditioning for the home.

For the past five years, Marks has been sales manager for a heating and air conditioning equipment company located in the midwest. He was promoted to this position after three years as salesman and sales training director.

Also, he served as an instructor in L-P gas and heating equipment extension courses connected with Wichita university.

In addition, Marks has over 24 years' experience in the sales divisions of heating, radio, and appliance firms, including management positions on various levels.

Marks was graduated from the Blee Military Academy and the Macon (Mo.) Junior college. He served in the Medical Department, U. S. Army, during World War I.

He will direct the Timken Silent Automatic national sales activities from the division general offices.



Louis Marks

Why DO MORE DEALERS PREFER LENNOX?

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LENNOX BRINGS YOU THE OUTSTANDING OPPORTUNITY IN HOME AIR CONDITIONING

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Lennox wants its dealers to be prosperous—locally the most prominent name in home comfort. The entire factory-dealer partnership (no middle man) is built upon this basis. Here's what being a Lennox dealer would mean to you:

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- A product warranty that assures customer satisfaction... far more liberal than is common in the industry.
- Most effective, "two-listed" selling tools ever offered dealers in the heating and air conditioning field.
- Proven business development ideas... door openers, methods of getting extra service business, building new sales, earning more profit.
- Nation-wide branch office engineering service that places the finest heating and air conditioning technicians at your disposal—whenever and wherever you need them.
- Largest consistent advertising program... tells your prospects about your products... helps establish you as the leading dealer locally.

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Water Treatment

What Does It Do? How Is It Accomplished? and How Much Does It Cost?—Water Conference Furnishes Some Answers

PHILADELPHIA — What can water treatment do for an air conditioning or refrigeration system? How is it accomplished? What does it cost?

Some answers to these questions were brought out at the Water Conference held during the 50th annual meeting of the American Society of Refrigerating Engineers here.

"Industry today recognizes the value of an effective water treatment program," pointed out one speaker—E. H. Hurst of the National Aluminate Corp.

"There are ample reasons for this recognition, which include:

"1. Freedom from heat transfer losses due to scale build-up.

"2. Freedom from contamination of processes by corrosion products.

"3. More efficient operation of equipment free of scale and corrosion.

"All of which," Hurst said, "mean more profits to industry. Also, effective treatment programs may result in:

"1. Reductions in operating costs.

"2. Reductions in maintenance costs.

"3. Possible savings in design and overhead.

"These lead to efficient money-saving operation of equipment.

"Aaron Wachter, in a recent article in *Corrosion*, cites an example where the use of an efficient treatment method for corrosion prevention has reduced annual maintenance costs from \$1.20 per sq. ft. of heat exchange to 45¢ per sq. ft. of heat exchange.

"Water varies in composition depending on the source location of the water and may be scale forming and/or corrosive in nature. It may also support microbiological organisms of varying types and numbers," Hurst explained.

"In many instances, the individual operators have endeavored to identify the nature of the water used in their cooling system. This is not easily accomplished unless the individual is trained in water technology or unless the system, after extended use, shows very evident indication of scale, corrosion, or microbiological factors; this only after a problem has developed and serious damage already produced or efficiency cut back.

"The development of water technology in recent years through research and practical applied sci-

ence enables the operator of a system to call upon the services of an organization thoroughly equipped and experienced in the science of water treatment.

"This valuable aid to industry provides not only the identification of the problems involved but also includes recommendations of effective treatment methods and guiding of their applications to the system.

"Based on his knowledge and experience, the competent water technologist can predict the probability of serious troubles in a system without waiting until the trouble has developed. 'An ounce of prevention is worth a pound of cure' would very well describe the benefit of consultation with the water treatment technicians and adoption of an effective treatment program," he said.

"The actual selection of the treatment program is based on a thorough investigation of the environment, analysis of the water, and also on the effectiveness of various chemicals under specific conditions.

"There is no such thing as a 'cure-all' for problems imposed by water. There are a number of proprietary compounds which, be-

Editor's Note: A highlight of the 50th annual meeting of the American Society of Refrigerating Engineers in Philadelphia was the Water Conference. On these two pages the News presents a discussion of the problem by E. H. Hurst of the National Aluminate Corp. This is the final article of a series on the conference.

A general summary of the conference was published in the December 20 issue, which also contained many of the questions and answers considered at the meeting. In the Dec. 27 instalment R. H. Savage of Water Chemists, Inc., Los Angeles, outlined major functions of water treatment specialists. The Jan. 3 issue contained the views of John Engalitcheff, who believes that many of the problems can be eliminated by proper design and the use of the right materials. In the Jan. 10 portion of the series Harvey W. Hottel, Washington, D. C. contractor, advised contractors to consider entering the field of water treatment.

ing a mixture of proven formulations, can solve scaling, corrosion, or microbiological problems. However, even these are not adaptable to all conditions and problems and the selection is based upon experience with various types of problems and knowledge of the limitations of the treatment.

"The water treatment industry today has a number of chemicals which have been developed and formulated to give excellent results: (1) polyphosphates, (2) organics, (3) chromates," Hurst explained.

"The polyphosphate which is primarily used in cooling water treatments is a molecularly dehydrated phosphate of which there are many forms. The value of polyphosphate in a cooling water is twofold: it can prevent scaling of the heat exchange equipment and can also provide corrosion protection by formation of a protective film.

"The use of polyphosphate for scale prevention only involves low dosages and, in fact, high dosages of polyphosphate can actually accelerate scaling conditions. The action of the polyphosphate is one of stabilizing the scale-forming materials in the water to delay precipitation. There is also a detergent action which tends to keep the surfaces clean, which is important not only from maintaining the system free of scale but also in improving corrosion protection.

"Corrosion prevention with polyphosphates is usually accomplished with synergists of some nature added to form a continuous protective film. The dosage for corrosion prevention is usually on the order of 30 p.p.m. of phosphate in the system water, and in most instances the pH of the system must be controlled through addition of acid.

"Polyphosphates have certain advantages over other types of materials in some instances, they being non-toxic in nature and not being subject to disposal problems or reaction with oxidizing or reducing agents. They do have a disadvantage in that polyphosphate tends to revert to the ortho form, which is not effective in stabilization.

"The reversion is a function of time, temperature, and pH; and for that reason polyphosphates are not usually suggested for systems having a long holding time.

"Where polyphosphate is used in systems having a long holding time, the addition of acid is usually required to adjust the pH of the system water below the pH of

saturation of calcium phosphate which may form following the reversion of the polyphosphate," Hurst declared.

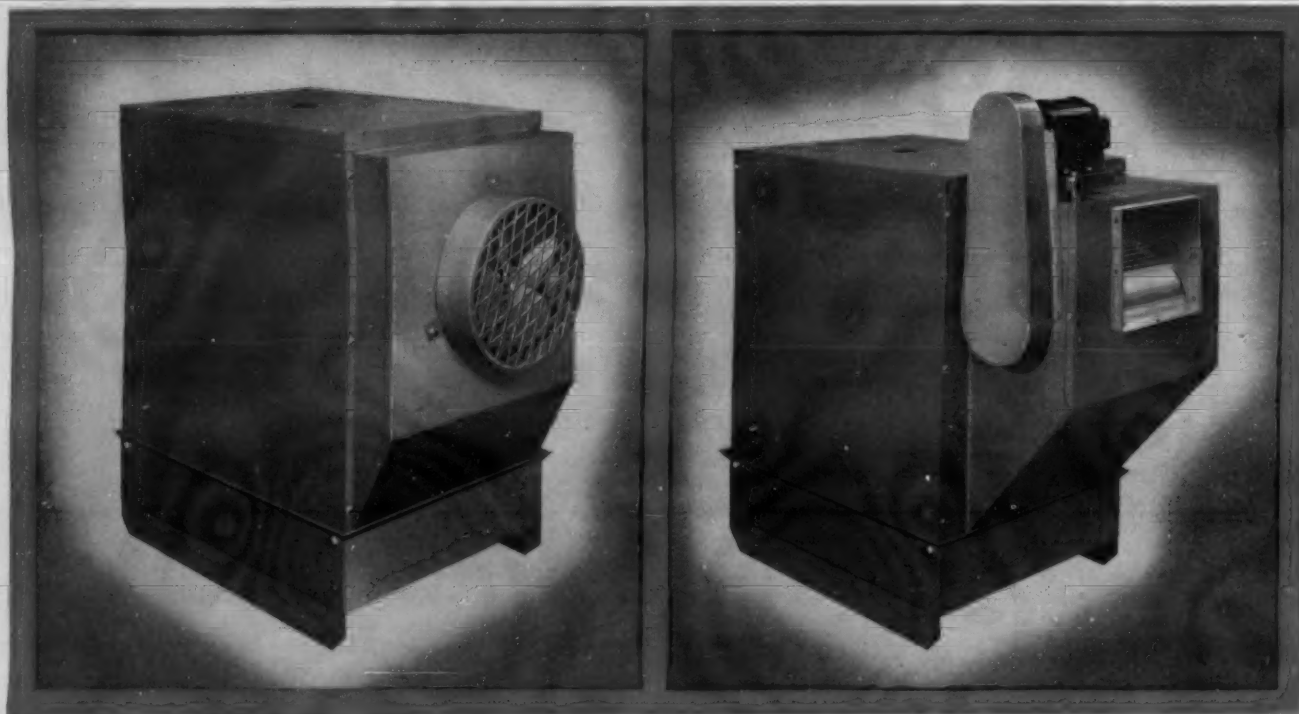
"Organic materials of varying natures are used in cooling water systems primarily for scale prevention. The organic materials most commonly used are derivatives of tannin, lignin, starches, and other related materials.

"These surface active materials should not be confused with the many 'dark liquids' which magically cure all problems.

"Organic surface active ingredients do have a very definite place in treatment of cooling water systems.

(Concluded on next page)

SMASHING SUCCESS STORY



LARKIN WATER-SAVER COOLING TOWER IS GOING GREAT GUNS ALL OVER NATION

Not since Larkin introduced its now famous Frost-o-Trol® hot gas defrost system has a smash hit like this come along!

The Larkin Water-Saver is THE answer to the growing demand for a high-quality, low-priced cooling tower.

Wholesalers and dealers took to this new line like ducks to water, when it was introduced about a year ago—following more than two years of research and engineering. From coast to coast, the orders poured in—and they keep on coming in, new orders and repeat orders. This is the real answer to whether a product's really got it!

Propeller or Centrifugal Models

A feature with wide appeal is that the Water-Saver is available with propeller fan or centrifugal blower. There is a variety of models in each type.

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Table 1—Selection of Treatment for Cooling Waters

	Type of Problem		
	Scale and Microbiological	Scale, Corrosion, and Microbiological	Corrosion and Microbiological
Low Concentrations	Organic or Polyphosphate plus Biocide	Polyphosphate plus Biocide	Polyphosphate plus Biocide
High Concentrations	Organic or Low Dosage Polyphosphate* plus Biocide	Chromate plus Polyphosphate* plus Biocide	Chromate plus Low Dosage Polyphosphate* plus Biocide

*Acid may be required.

Water Treatment Problems--

(Concluded from preceding page) tems. Scale prevention is possible through distortion and coating of scale-forming crystals to form non-adherent particles. Corrosion benefit is obtained through staining of the surfaces by the organic and by maintaining the clean surfaces in the system.

"The organic materials are usually non-toxic and are easy to handle. They also are not subject to the disadvantage of polyphosphate reversion. However, they are not as strong in their action of preventing scale and corrosion and are usually used in conjunction with polyphosphates or chromates," he said.

"Chromates have long been accepted as successful corrosion inhibitors. Chromate treatment itself is, however, of no value in scale prevention; and, if scale and corrosion are the problem, then the chromate must be used in conjunction with one of the surface active scale preventatives.

"Chromates used alone for corrosion protection require high dosages which can be expensive unless used in systems of high concentration.

"While chromates do provide a good protective film, they are subject to some disadvantages. If not handled in accordance with specified safety instruction, chromates can lead to dermatitis problems. In a number of localities, chromates must be removed from waste waters before their water goes to the sewer. There are practical methods for doing this.

"Table 2 illustrates the costs of treatment of a system using polyphosphate, organic, or chromate at varying concentrations. The cost of polyphosphate is low in the instance of 1.5 concentration since such low dosages are required.

"This may or may not be offset by the cost of additional water to maintain low concentrations. With

this exception, the costs of treatment decrease as concentrations increase," Hurst explained.

"There are a number of variables which may tend to change the cost figures shown here in addition to the number of concentrations in the system. Since waters vary in intensity of scaling or corrosive nature, treatment level must be varied to give the protection desired.

"In large systems which have regular full time operators on duty, the need of a large safety factor is decreased and lower treatment levels and costs can be maintained. However, for our purposes here, a cost of 1¢ per ton of refrigeration can be used as a rule-of-thumb figure.

"These figures do not include microbiological treatment costs, however, since they vary so widely.

"In addition to control of scale and corrosion, control of the microbiological organisms in system is required for most cooling systems. Problems of a microbiological nature are not as easily discernible as those of scale and corrosion and require the evaluation of a trained specialist.

"In some instances, actual deposits of slime or algae may be seen, whereas in other systems the organisms may be present in equally troublesome quantities and yet not be recognized as primarily slime deposits," Hurst said.

"The microbiological organisms can be troublesome not only by decreasing heat transfer rates or plugging tubes but also by influencing the corrosion in the system. Even in the presence of effective control measures for scale and corrosion, microbiological organisms may act as a binder to form scale deposits of what otherwise would be non-adherent silt or scaling material.

"Microbiological deposits prevent the corrosion inhibitor from con-

Table 2—Scale and Corrosion Control; Cost of Treatment
Recirculation Rate—3 g.p.m./ton of Refrigeration
Temperature Extraction In Tower—10° F.

Type of Treatment	Concentration Ratio	Make-up GP/D Per Ton of Refrigeration	Cost Per Ton of Refrigeration Per Day
Polyphosphate	1.5	130	\$.005
Organic	2.0	86	\$.011
Chromate	4.0	56	\$.004

tacting the metal surfaces, and corrosion may occur beneath the deposits due to differential corrosion cells or due to the action of corrosive sulfide-releasing bacteria.

"Since the behavior of microbiological organisms cannot be predicted easily, the treatment for control of these organisms is more involved and specific than that of scale or corrosion. Specific treatments for control of these organisms would include chlorination, either through continuous or shock type application of chlorine; chlorine releasing compounds; chlorinated phenol derivatives; quaternary ammonia compounds; or copper compounds.

"Control of the chemical treatment level in the system is equally important as the proper selection of treatment. In most cases the feed of the chemical is on a continuous basis. Even then periodic checks of treatment level are required. Changes in the amount of make-up added to the system may greatly affect the treatment level.

"Let us consider two systems

identical in every respect with the exception of holding capacity. In a system having a holding capacity of 5,000 gallons an increase in make-up rate would be noticed a lot more than in a system of 50,000-gallon capacity.

"Consequently, more frequent checks on the treatment level, concentration ratios, and pH are necessary to insure proper results when system water composition can fluctuate rapidly," Hurst said.

"In summary, the essentials of a sound water treatment program include:

1. Determination of the problems involved.
2. Evaluation of the system characteristics.
3. Selection of the proper treatment.
4. Feed of the treatment.
5. Control of the treatment level.
6. Evaluation of results.

"A program including these is capable of producing goods results at minimum cost to the operator."

A-P Building New Plant In Nijmegen, Holland

MILWAUKEE—The first subsidiary plant of A-P Controls Corp. beyond the North American continent is being constructed at the present time, it was disclosed by Roy W. Johnson, president.

The plant is being constructed at Nijmegen, Holland, with completion anticipated about Dec. 1. The plant, with 18,000 sq. ft. of floor space and equipment, represents an investment of approximately \$200,000, Johnson states. A-P Controls has a five-year lease with option to purchase.

Remy H. Lugwig, who is now vice president in charge of foreign operations, will direct the activities of this plant in addition to the Canadian plant of A-P Controls located at Cooksville, Ont.

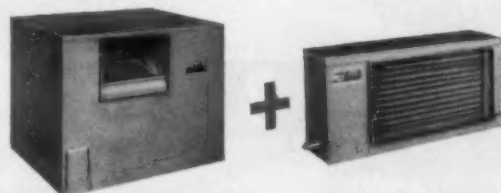
The Nijmegen operation will be a wholly owned subsidiary known as A-P Control Maatschappij, N. V. Initial employment of 25 is expected to rise eventually to 100. A Hollander has been hired as a factory manager.

A major product of the plant will be controls for space heaters. A-P Controls will sell its units to European manufacturers of space heaters and controls for electric refrigerators and freezers and humidifiers and air conditioning. Export business has been accounting for around 12% of the company's total sales volume.



Kooler-aire system

of "waterless" air conditioning



Kooler-aire operates on electricity only! Air cooled condensing unit, consisting of sealed compressor, condenser coil, blower and receiver, can be located in or out-of-doors. Unit is used in conjunction with housed cooling coil, which may be installed anywhere in outlet side of air supply system. Copper tubing carries the refrigerant from condensing unit to cooling coil.



"packaged" air conditioner

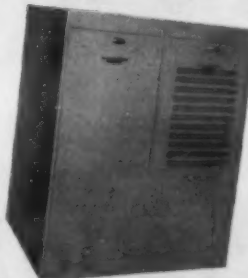
for commercial or home use



For home "add-on" installations, the usAIRco "packaged" air conditioner is quickly and easily connected to a warm air furnace. Only two simple duct connections are required. The home unit utilizes ductwork, blower and filters of the existing warm air heating system. For commercial use, blower and plenum sections can be added.



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home cooling and heating unit

The usAIRco year 'round combination cools, heats, filters and dehumidifies the air. Consisting of a gas fired unit, this compact combination requires little more space than the average furnace. It can be installed almost anywhere... basement, closet or utility room. Same ducts distribute both warm and cool air.

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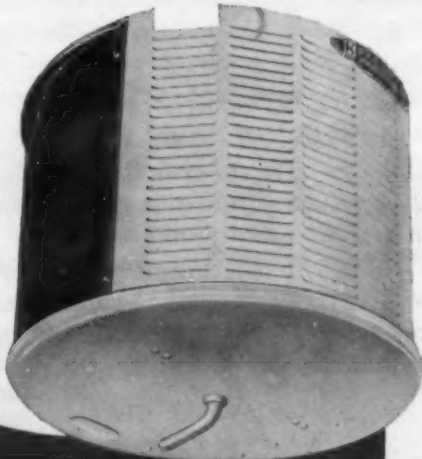
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Published Every Monday by
BUSINESS NEWS PUBLISHING CO.
450 W. Fort St., Detroit 26, Mich.,
Telephone Woodward 2-0924.

New York Office: 521 Fifth Ave.,
Telephone Murray Hill 7-7158.
Chicago office: 134 S. LaSalle St.,
Telephone Franklin 2-8093.

Onto Office: Commercial Bank Bldg.,
Berea, Ohio. Telephone Berea 4-7719.

Subscription Rates: U. S. and Possessions
and Canada: \$6.00 per year; 2 years, \$9.00;
3 years, \$12.00. All other countries: \$10 per
year. Single copy price, 40 cents. Ten or
more copies, 30 cents each; 50 or more copies,
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VOL. 74, No. 4, SERIAL No. 1,349
JANUARY 24, 1955

Commercial Refrigeration and Air Conditioning Statistics

Truly there isn't a more complex industry in the world from which to gather statistics than commercial refrigeration and air conditioning.

First, there are a great many different products involved. Second, each product is composed of many sub-assemblies, the end use of which is difficult for the original manufacturer to trace. Third, complete units are partly "packaged" at the factory and partly "tailor made" in the field.

A more familiar analogy to this dilemma might be the men's clothing business. Suppose a statistician set out to discover the numbers and dollar volume produced in a given period in the United States of men's suits, overcoats, topcoats, hats, caps, shirts, ties, sox, underwear (longies, shirts and pants, jockey shorts, button shorts) broken down by sizes, colors, patterns, materials, and styles—and by various types of retailers who sold men's wear.

He could start out by getting production figures of the "complete unit" (factory made) manufacturers of all the above-mentioned items. Then he'd attempt to trace quantities of materials sold to tailors and shirtmakers, allowing for diversions of fabrics going into women's and children's clothing, and arriving at some sort of average price per unit. Next, he'd have to get estimates on the homemade sewing-machine market. Then he'd put them all together, estimate the items retailed in areas on which no records were kept, and arrive at total figures so far from the ACTUAL that they'd bear no semblance of reality.

See the complications? Well, multiply by 13—and you might conceive the task facing those who would gather statistics on commercial refrigeration and air conditioning.

They'll Do It Every Time Jimmy Hatlo



Sadly, associations of manufacturers (ARI and CRMA) haven't been notably helpful in this regard. It isn't their fault, but it's a disappointment. To the NEWS this situation is particularly galling, because we did a lot of spade work, and plenty of private personal selling, to help organize. Chief reason for all this personal effort was the hope that they could help us publish authentic production and sales figures—not only nationally, but regionally and locally.

Where are these statistics?

They ain't.

And who's to blame?

There aren't any pat answers for these questions. "Mulishness" is the only one we can think of at the moment. Unwillingness to cooperate with competitors for mutual benefit is what we mean by "mulishness."

Possibly the techniques of statistics-gathering could be faulted, too. For instance: Questionnaires should be accompanied by a note of explanation as to why the information is needed, and WHO wants it. If executives realized that they are making decisions based on statistics they're asked for, but don't help supply, their attitude might change.

Government (Census Bureau, etc.) figures and methods can't be trusted. Sad case history: The writer was called down to Washington during World War II, and sworn into the War Production Board rather unexpectedly. When he arrived, the following problem was put up to him:

A committee had to decide how much commercial refrigeration and air conditioning equipment should be turned out each year for the Army, Navy, Maritime Commission, Lend-Lease, Board of Economic Warfare, and essential civilian uses. Four interested departments of the WPB demanded statistics which might give them a clue to programs which each could recommend to the committee. None of them had any answers. Neither did the Army nor Navy.

It is unnecessary for our purposes here (and it would be unkind) to go into the sordid details. Suffice it to say, the only method which seemed open to them for collecting this information had, after days of research, turned up no needs or uses for refrigeration at all.

Almost everything we've said in this editorial has been disparaging, disconsolate, and almost desperate in re statistics. Is it impossible to collect and publish authentic marketing and production figures for our industry?

Shouldn't be, eventually. Everybody—from manufacturer to distributor to contractor to serviceman—needs such figures to help his personal commercial planning.

Let's get off dead-center! To start: let's cooperate with ARI in its attempt to gather, authenticate, and PUBLISH quarterly production and sales figures for every substantial refrigeration and air conditioning item.

Should that millenium occur, every manufacturer, contractor, jobber, serviceman, distributor, dealer, salesman, and manufacturer's agent in our industry can make more money because he can plan ahead.

Quotable Quotes

Give up security as an ideal. Anyone who promises it is misbranding his political, social, or economic goods. If you insist on being cheated, buy gold bricks or perpetual motion machines. It is now clear that if you live at all, you will live dangerously.—DR. HENRY M. WRISTON, President, Brown University.

Infatuation may be felt quite suddenly, but love always takes time. Why? It takes time to develop and mature as the result of many experiences together. Love is built up gradually through numerous contacts and interplay of personalities. It can never be found, just growing idly by the wayside, to be plucked at will. It is the result of effort, attention, and unselfishness. It is a creation!—MURRAY BANKS.

Controlled Comfort B.B.*

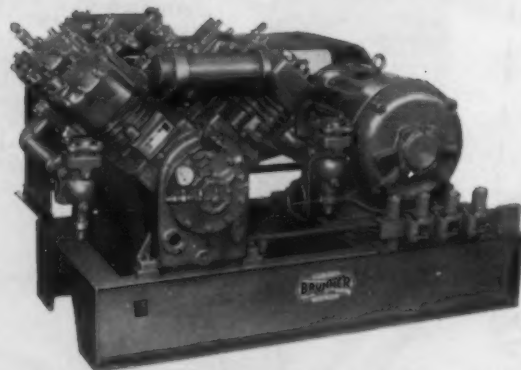
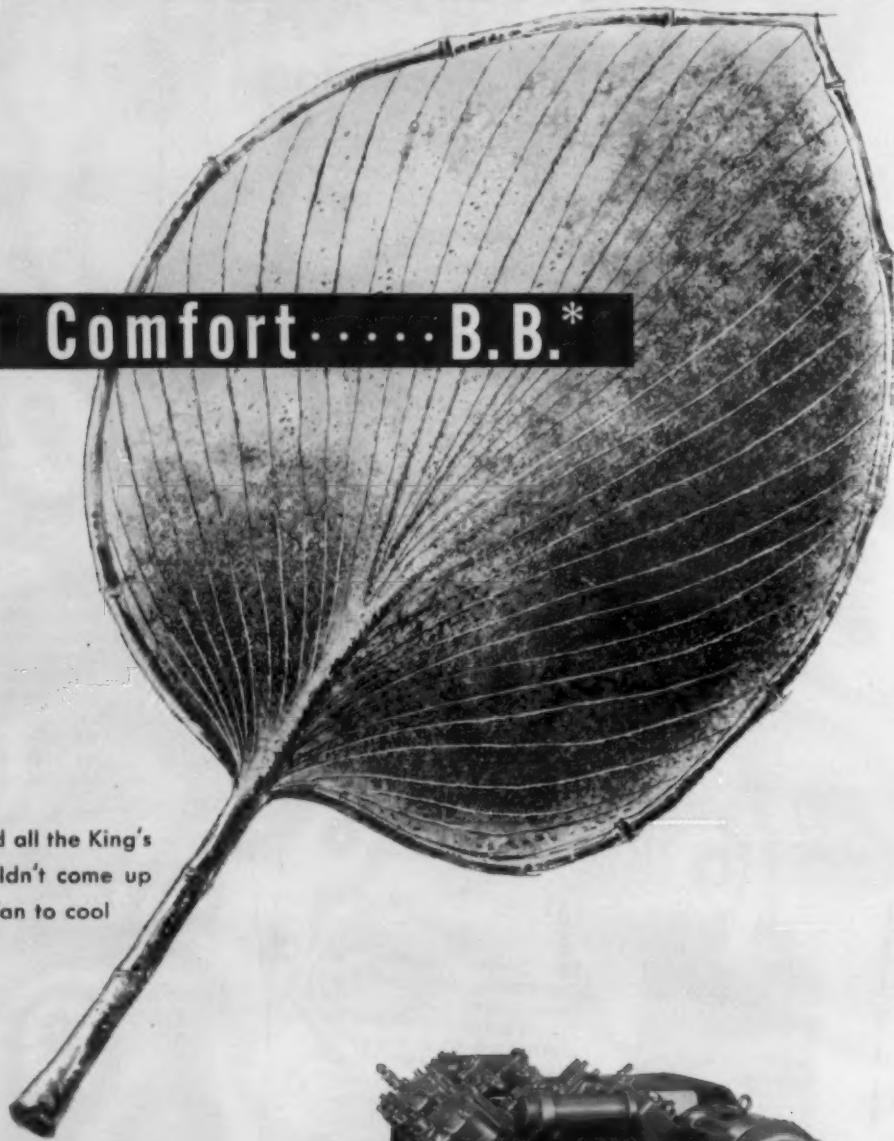
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Problems That Must Be Met When Installing 'Add-On' Residential Air Conditioning Systems

PHILADELPHIA—What types of problems are encountered with "add-on" type residential air conditioning installations?

Electrical, plumbing, ductwork, and general problems, says P. B. Beemsterboer of Frigidaire Div., General Motors Corp.

Speaking at the Air Conditioner Conference during the 50th annual meeting of the American Society of Refrigerating Engineers here, Beemsterboer outlined these problems.

"Much emphasis has been given through various media to the problems covering the installation of the year-round air conditioning in new residences. This is due probably to the fact that builders have taken the lead in using this very popular item as a means to stimulate the sale of new homes," he said.

"However, the existing home market of some 45,000,000 homes with 12,000,000 of them already equipped with some type of ductwork offers the manufacturer a ready-made market for the increasingly popular 'add-on' central system.

"With this type of a system, to be installed under various conditions, problems may arise which, if not properly attended to, may be the source of trouble.

Electrical Problems

"The first and most important question to be answered when considering an 'add-on' unit is: what type of current is available?

"Many of us can readily recognize, from an inspection of the motor board, the type, amount, and voltage entering the home. To the uninitiated this presents a problem and perhaps the best answer is to consult the local power company to determine if adequate facilities are already installed or available," he suggested.

"Most furnaces have controls and it is very important that a complete survey of those available be made to determine if they can be integrated with the new ones required. Automatic damper arrangements can be a serious problem in older homes.

"It is essential that a complete wiring diagram be made as every installation in older homes presents a different problem," Beemsterboer suggested.

"Thermostats may be difficult to install and perhaps will require a different location than the present heating thermostat. Naturally, proper interlocking to prevent the heating and cooling from working against each other and proper wiring to insure the desired fan operation must be planned, for good trouble-free operation.

"Experience tells us that continuous fan operation during the cooling cycle is more desirable even though it has its disadvantages when the cooling mechanism is off.

"Attention should be given to proper fusing for the best protection, such as separately fused blower and compressor circuits.

Plumbing Problems

If a water-cooled condenser is installed, there are some items which should require your attention.

"Is the present service adequate in quantity and pressure, or will

other facilities in the home suffer when the cooling unit is on? This can be a serious and costly problem if a proper survey is not made," he warned.

"It is a good practice to run a new water supply line from somewhere close to the meter to the unit to prevent the noise of running water from being heard in the house.

"Care must also be exercised to prevent vibration and noises from being transmitted from the unit to the house members. Some units take this into consideration, others will have to have proper eliminators to prevent this from occurring.

"Insulation of these lines may be required if local conditions, such as cold water, high humidity, etc., may prevail. Many times, normal home usage of water will not cause sweating and dripping of water lines but continuous running of water, as required on some days, will cause serious problems of dripping.

"Even though the waste water may be used on the lawn, adequate sewers should be available when this alternate method of disposal is required. These facilities must also be utilized for the condensate drain, and, therefore, must be low enough for a gravity drain, or some other method such as a pump will have to be provided.

"If a tower and pump are used, care must be given to provide a good location from an air, noise, and draining standpoint, as each of these could be a problem if not properly attended to at the time of installation.

"If the tower is located in the basement or other heated areas, freeze-up is not a problem, but freezing can be serious if no provisions are made for draining.

"Remember also, that noise of a tower can be objectionable to neighbors, so location of the tower is important," Beemsterboer said.

Ductwork Problems

"On this subject alone, reams could be written but a few highlights will be touched on.

"Again, the novice may find himself at a loss. The present installed ductwork may run in many directions, and it will require a careful study of the existing lines to locate the cooling unit for the most efficient and yet the most economical installation.

"With 'add-on' units, most installations will be made with existing ductwork. A careful study should be made so that precautions can be taken to keep the sound level down by adding sound-absorbing material to an installation where ducts and grilles are undersized.

"Suitable dampers should be installed for the proper block-off of cooling when heating is required and vice-versa. In some cases additional dampers will have to be installed for the proper balancing of the air system.

"Should the supply ducts be insulated to prevent sweating?

"This is controversial, but our experience has been that in some cases it is not necessary. Naturally, there are cases where it is required, and a careful study of the situation at hand will provide an answer. The above applies to basement installations. If other locations such as a ventilated crawl space are encountered, insulation may be required.

"The existing discharge grilles may be fine for heating, but might not meet cooling requirements. If some means of deflecting the air upwards is not available, means to do this should be added," he suggested.

General Problems

"This covers a 'multitude of sins' and can be the source of many problems, but let it be said

in general that many of these problems will resolve themselves if a careful study of the situation is made, and a little 'horse sense' is applied. But, just for the record, a few should be pointed out:

"1. Are the entrances such that the equipment can be delivered?

"Many times a sale is made and, at the time of delivery, the stairway or other entrances are too small to accommodate a unit. This can result in costly alterations.

"2. Where should the unit be placed to minimize ductwork?

"This is all too evident, but if a study is not made, it is possible to find out later that labor and materials could have been saved by a better choice of unit location.

"3. Is the furnace fan adequate to handle the cooling load?

"Furnace fans and motors can be utilized for cooling air delivery only if they have adequate air capacity and sufficient horsepower to overcome the added resistance of the cooling system. Obviously, if a change is later required, it would entail cost and dissatisfaction.

"4. Will the unit be touching the furnace and will vibration be transferred?

"It might be possible for a noise problem to be eliminated if provi-

sions are provided when placing a unit next to a furnace to prevent vibration transfer.

"5. Are breaker strips (canvas collars) necessary in the supply and return ducts?

"This ties in with the previous question. These are very important in some installations to prevent unit noise and vibration from being carried to the conditioned area," Beemsterboer said.

Should Unit Be Placed Downstream or Upstream?

"6. Should the unit be placed upstream or downstream from the furnace?

"Codes in many cases dictate the proper practice. When downstream, there is a possibility of condensate forming on the combination chamber causing rusting. Whether or not this is harmful is debatable, but it is a problem.

"7. Should the pilot light be left burning during the cooling season in a gas furnace?

"Here is another problem that may be the source of some discussion. Does it add to the cooling load in a quantity that offsets its benefits in preventing condensation of moisture on the heat transfer surface, or does it add moisture as a result of combustion?

"8. What about gravity installations?

"It seems that the addition of a blower to a gravity system was successful in many cases, and therefore it can be assumed that using these same ducts for cooling will be successful. Caution should be exercised, in old homes, to be sure the present system is clean.

Cooling the Upstairs Offers Problems

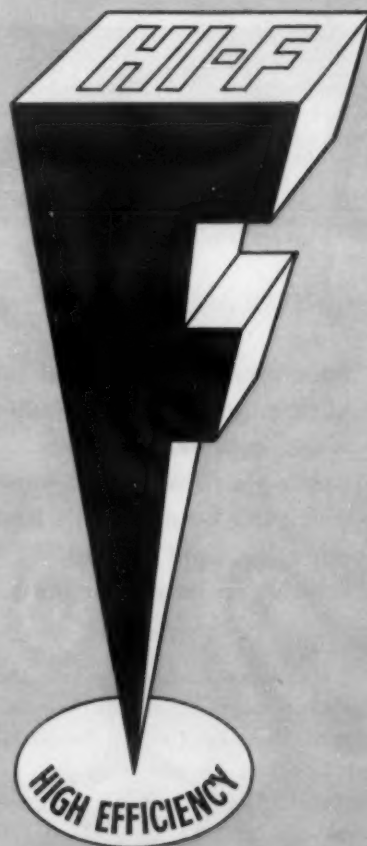
"9. What about the upstairs? Is it difficult to cool?

"Naturally, since warm air rises, the tendency of heating men was to restrict the piping to the second floor; however, practice indicates that this can be accomplished by cutting down on some first floor supplies.

"10. Are floor registers okay—central floor returns? Are they acceptable?

"Tests have shown that if the required air is delivered to a room, it will do a cooling job, but it must be remembered that the air must be deflected upward in cooling. Central returns have been successful, but here again a study of the situation must be made to assure a smooth path of return to the opening."

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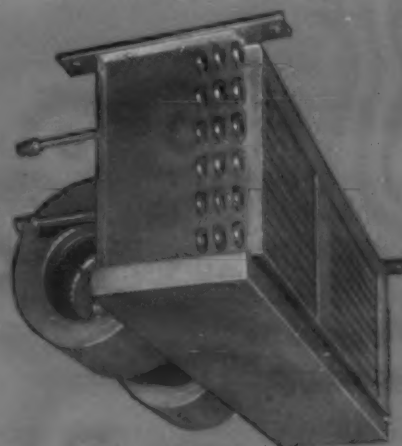
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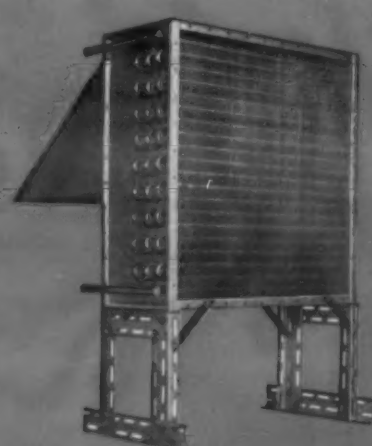
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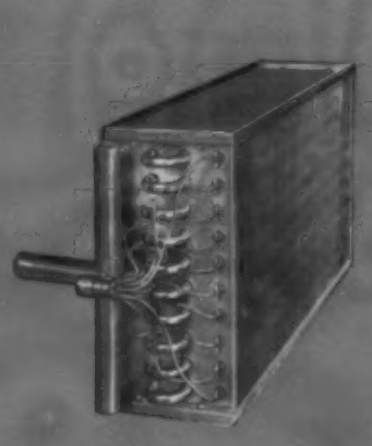
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PRESSURE GAUGES and Dial Thermometers for all services. MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.

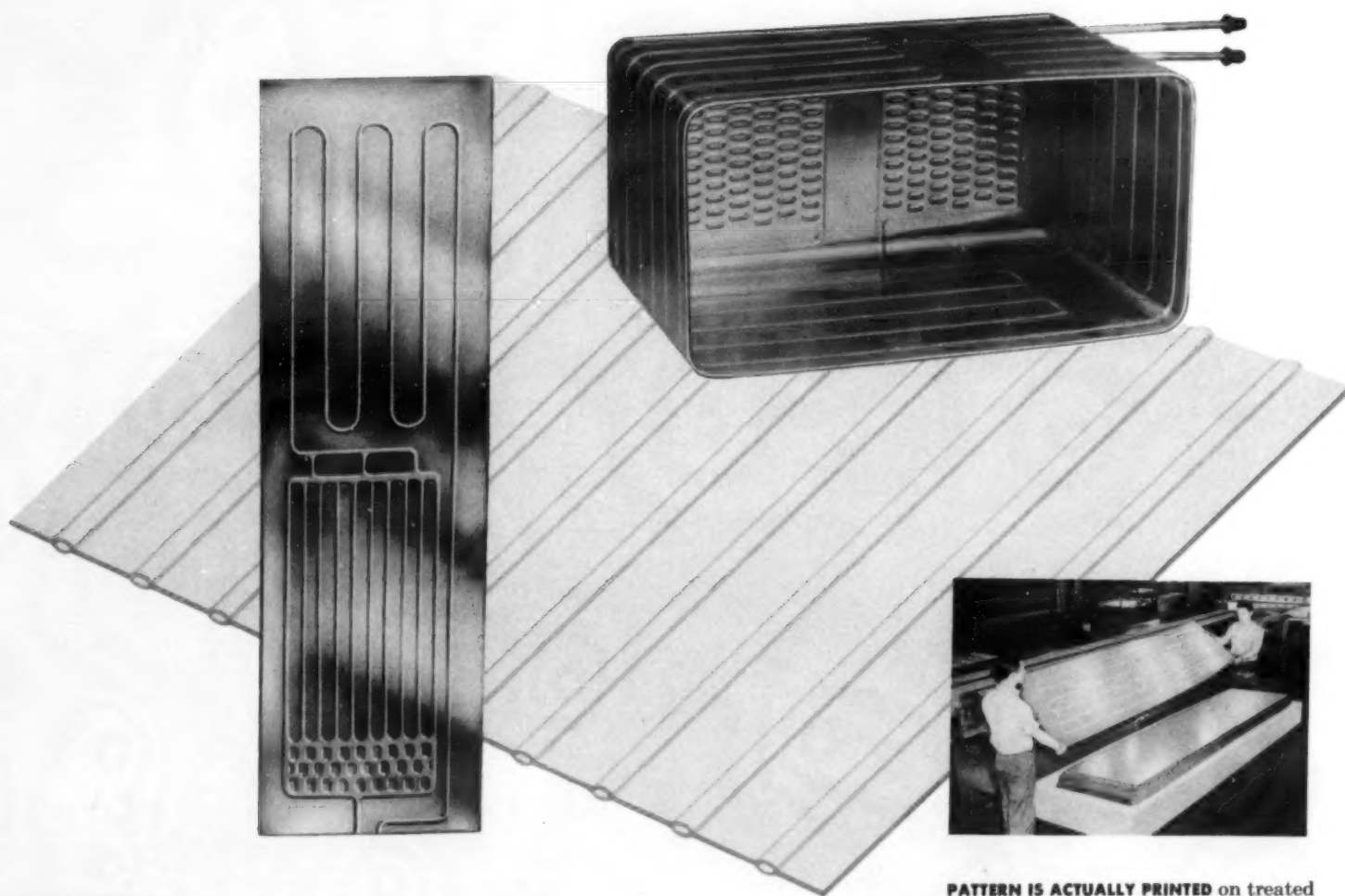
MARSH INSTRUMENT COMPANY
Sales Affiliate of Jos. P. Marsh Corporation
Dept. D., Skokie, Ill.

For Reduced Costs
and Improved
Performance in
Heat Exchanging
Applications
SPECIFY



CROSS SECTIONAL VIEW
showing tubing as integral part of sheet
rather than separate tubing brazed
to sheet.

ROLL BONDED



PATTERN IS ACTUALLY PRINTED on treated aluminum sheet. Not only is the tubing printed, but headers and accumulators as well. This saves parts, saves man-hours in fabrication and offers a virtually unlimited choice of refrigerant circuits. Result: an improved product at lower cost.



ALUMINUM PARTS

now being produced BY REYNOLDS

Time and again Reynolds has pioneered in new ways to give you more for your money in aluminum fabricated parts. Reynolds Roll Bonding is only the most recent example. This new method of providing sheet with integral refrigerant tubes and accumulators opens up tremendous new opportunities for product improvement to appliance manufacturers for the following reasons.

With Reynolds Roll Bonding there is no brazing and no flux contamination. Metal ordinarily used for tubing, accumulators and receivers is eliminated. The passageways are inside the sheet. There are no tubes to bend. Welding is minimized. Many connecting and assembly operations are eliminated. There is no problem of lost conductivity. You can route refrigerants wherever they are needed.

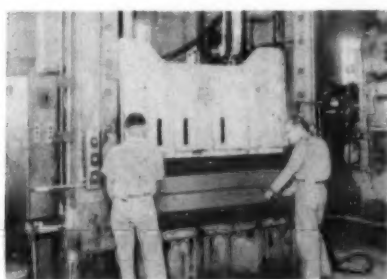
Reynolds Roll Bonding is strong and compact. Passageways may be flat, oval or round. Additional length adds nothing to the cost. Passageways themselves act as stiffening ribs.

Reynolds Roll Bonded Aluminum Sheet—available with a smooth surface or an embossed pattern—is an ideal material for refrigerator evaporators, refrigerated freezer liner panels and vertical cold plates. In fact, it should be an economical, efficient and practical replacement for all applications involving heat exchanging where tubing fastened to sheet has been used in the past.

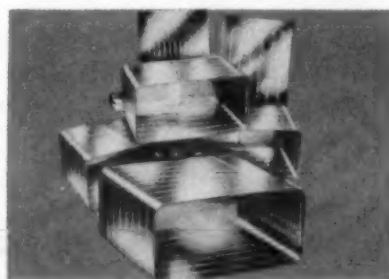
For full details, contact the Reynolds office listed under "Aluminum" in your classified telephone directory or write *Reynolds Aluminum Fabricating Service, 2001 South Ninth Street, Louisville 1, Ky.*



NEXT STEP IS THE BONDING PROCESS. An "unprinted" sheet is placed on top of a "printed" one and the two sheets are metallurgically bonded together. This "bonding" takes place over all the contacting surface *except* where the printed circuit prevents the two sheets from bonding together.



CONTROLLED EXPANSION OF THE PASSAGEWAY. Hydraulic connections are made to edge of sheet where pattern terminates and hydraulic pressure applied. Result: a smooth, clear, leak-free passageway exactly as it was "printed." (Each unit tested and found leak-free at 3,000 p.s.i.)



EXTREME FLEXIBILITY OF DESIGN is one of the principal advantages of Reynolds Roll Bonding. Since the circuit is an integral part of the sheet, there are no limitations imposed by the usual problems of welding, bending, expansion and assembly. This means manufacturing economy and product improvement.



REFRIGERATOR
CRISPER PAN

ALUMINUM
ERVIC

Service Department Controls--

tion, Morris worked out a mnemonic standard classification for all parts and materials handled. He set up his inventory records using that classification. The purpose was to eliminate the confusion usually caused by differences in terminology among all personnel.

Then all parts, materials, and supplies were stocked in clearly designated areas and numbered bins in the stockroom. The bin number for each part was recorded in the stock record so that it is a simple matter at any time to find any desired part and to know just how many are on hand.

One particularly helpful device was the establishment of a numbered bin for each service truck. Each truck is stocked with an inventory of most commonly needed parts and supplies. As the serviceman uses these parts on jobs, he records them on a daily truck stock charge sheet or a service order, depending on the type of job on which the part was used. These charge sheets and service orders are delivered or mailed to the office daily.

When the stock clerk gets those records, he automatically puts into the appropriate truck bin replacements for the parts and supplies used. Then, when the serviceman comes to the shop, he picks up his replacement parts. In this way, his truck is always adequately stocked with the parts he most needs at all times and time wasting trips are eliminated.

For parts the serviceman does not normally carry in his truck, a special requisition is required. If it is discovered that the serviceman uses a particular requisitioned part frequently—as would become apparent from the stock records—that particular part is made a regular item in his truck inventory. Again a saving of travel time and cost is accomplished.

To keep accurate track of inventories in all trucks, a special ledger is set up for each truck in which the in-and-out movement of parts and supplies is noted. Each serviceman is charged with the responsibility for all parts and supplies in his truck.

If, on a physical count check, the truck stock is found to be

short and such shortages become significant and chronic, the responsible mechanic must pay for the missing stock at standard selling prices.

Forms provided to the servicemen permit them to record all work done, materials used, and time spent on each job. These forms are returned either personally or by mail to the office daily.

From these daily records, a "weekly time recap" is made by the service manager. The weekly time recap gives a detailed analysis of the jobs in progress, and an analysis of service and unapplied labor. The service analysis is broken down to separate entries for work charged to service reserve, service sales, service contracts, and unapplied labor.

By unapplied labor is meant all work for which the company must pay but for which it cannot charge to any specific job. This includes indirect deliveries, miscellaneous shop work, vacations, and holidays.

A payroll summary section of this form gives a breakdown of amounts charged to various accounts and gives a double check on the accuracy of figures posted in the analysis sections.

Morris commented that the data supplied by the servicemen has proved very valuable in probing weak spots and improving them. From a central dispatcher's control records, he said, it is easy to determine what equipment is requiring excessive service and replacement parts.

If the same serviceman is called back repeatedly, there may be reason for checking the quality of work he is turning out. And when large amounts of unapplied labor turn up, it is a cue to the executive that there may be a way to change procedures and eliminate some of it.

FORMS HAVE OWN CHECKLIST FOR PROCESSING

One feature that has been very helpful on all the forms designed for Five Towns, Morris said, is a checklist at the bottom that indicates all the steps to be followed in processing that form. Thus, as each step is taken, a check or initial is put into the appropriate square. This continues until the form has completed its circuit and is filed for future reference.

Taking the daily truck stock charge sheet for example, there is a place at the bottom for the

[illegible]

ON THIS SERVICE ORDER,
Five Towns' servicemen
give the company a com-
plete picture of the work
they perform each day.
These forms are turned in
or mailed in to the office
daily.

	EQUIPMENT	OUR NO.	MAKE	MODEL NO.	SERIAL NO.	BELTS		H.P.	VOLTS	PHASE
						TYPE	NO.			
1										
2										
3										
<hr/>										
12										
13										
14										
<hr/>										
ACCESSORIES		TYPE OF REFRIGERANT								
INSTALLATION DATA	DATE INSTALLED	JOB NO.			GUARANTY CODE		GUARANTY EXPIRES			
SERVICE CONTRACT DATA	DATE OF CONTRACT	TYPE OF SERVICE			CONTRACT EXPIRES					
<div> <div>NAME</div> <div>ADDRESS</div> </div> <div> JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC </div>										

PARTIAL REPRODUCTION of a service maintenance contract record card kept by Five Towns Refrigeration. This card contains all data pertaining to a particular customer and provides space for indicating when regular calls are made.

mechanic to sign it before he turns it in. Then there are squares to check as the following operations are completed: Approved by service department, posted to stock record, priced, extended, posted to job sheet, entered on recap.

And the weekly time recap goes through these operations, each to be checked off as accomplished: prepared, checked, posted to payroll records, posted to jobs in progress, posted to service reserve jobs, and posted to service sales register.

With his organization thus streamlined, Morris feels that he can back up his company's slogan "Specialists In Air Conditioning"

and live up to the claims he makes to prospects.

In a recent letter sent to some 1,500 area architects, contractors, and builders soliciting their business, Morris wrote:

"We believe we have the answers to an intelligent approach to the installation of your air conditioning systems, because we have:

"1. Our own engineering and layout department.

"2. The facilities of a complete union sheet metal shop.

"3. Representation as a regional factory office of Typhoon Air Conditioning Co., Inc., a 46-year-old company with an outstanding

reputation.

"4. Our own erection and installation department.

"5. Our own service department.

"All combined to give you an outstanding job at an economical price.

"Please feel free to call on us for any help in layout, design, or estimates."

Five Towns, in fact, has done so well as a Typhoon dealer that it has been elected to that company's "Hall of Fame" for outstanding sales records and is often called on by the factory to help other dealers with their engineering problems.



NAIL DOWN Your Scotsman Ice Machine FRANCHISE *NOW!*

There are plenty of reasons why dealers are nailing down territory after territory but basically they all boil down to one, plain, honest fact—A SCOTSMAN FRANCHISE IS **THE MOST VALUABLE AUTOMATIC ICE MACHINE FRANCHISE.**

Here are facts about a Scotsman franchise that will make you say, "that's the kind of franchise I want." Write, wire or phone and nail down a Scotsman Franchise as fast as possible. Several profitable franchise territories still open. Act now!

FACTS LIKE THESE MAKE A SCOTSMAN FRANCHISE MORE VALUABLE

- Scotsman offers America's only complete line of automatic ice machines.
- Extra long profit margins give you more profit on every sale.
- Scotsman territories are protected territories.
- No "post-sale" service headaches to rob you of your profit.
- Lower installation costs make more sales, give more profit.
- Powerful merchandising helps are always building sales for you.
- Heavy advertising at the consumer level pre-sells Scotsman for you.

SCOTSMAN DEALERS ARE SUCCESSFUL DEALERS—BE SURE YOU ARE ONE OF THEM! WRITE—WIRE—PHONE FOR COMPLETE FACTS

AMERICAN GAS MACHINE CO.

Division of Queen Stove Works, Inc.

Department AC15

Albert Lea, Minnesota



Please send me the facts and tell me how to "nail down" a Scotsman franchise.

Name

Address

City State



Super Cubero

Produce 100 to 500 pounds daily.

Super Flakero

Produce 350 to 1050 pounds daily.

What's New

When requesting further information on new products, please use "Information Center" form.

Double-Duty M-H Thermostat Selects Heating, Cooling



KEY NO. E-140

MINNEAPOLIS—A new double-duty thermostat that automatically selects either heating or cooling and a compact panel containing all of the circuitry needed for easy wiring of either add-on or combination heating-cooling units have been announced by Minneapolis-Honeywell Regulator Co.

Mounted in the conventional thermostat location, the new instrument provides automatic changeover between heating and cooling according to temperature changes.

It also provides homeowners with fingertip selection of continuous or intermittent fan operation.

The W-212A control panel, de-

signed especially for use with the new thermostat, is small enough for mounting in even the smallest heating-cooling cabinets.

Compact Converter Makes Soft Ice Cream

KEY NO. E-141

LONG ISLAND CITY, N. Y.—Federal Soft-Serv Converter, a machine that is said to convert ice cream, ice milk, and sherberts into soft cream in seconds, has been introduced by the Federal Machine & Tool Co.



The converter can be plugged into any 110-volt a.c. circuit. Small and compact, it takes up less than one square foot of space and fits easily on a back bar or counter.



Pre-Sized Duct Insulation Zips, Locks Into Place

KEY NO. E-142

NEW YORK CITY—A new type insulated duct covering, Protektinsul, has been announced by Miracle Adhesives Corp.

A pre-fabricated, specially compounded polyvinyl chloride outer finish, Protektinsul protects insulation against weather, abrasion, chemicals, mildew, and other conditions, according to the company. Protektinsul zips on and locks in place.

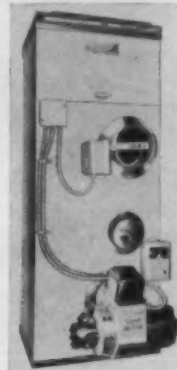
It is furnished in exact size so no cutting, fitting, or sewing is required on the job.

Indoors and outdoors, the covering provides an airtight, watertight, vapor-tight finish, and is available in colors. Miracle claims no painting, finishing, or further maintenance is required on the ductwork.

Furnace Designed Specially For Ranch-Type Home

KEY NO. E-143

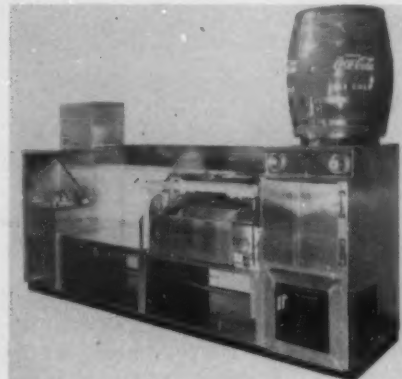
RIDGEVILLE, Ind.—A new furnace for ranch type or other one-floor homes without basements, has been announced by the Cox Mfg. Co. This new oil-fired furnace is known as the Wondaire "Special" Counter-Flo Type.



Designed particularly for contractor-builders and housing developments, this furnace works well with perimeter-type heating. Its compact vertical construction uses a minimum of space—in utility room, closet, or wall, according to Cox.

Cold air is drawn into the top of the unit, then filtered warm air is forced out through the bottom into the under-floor duct system.

The furnace cabinet is of Hammerloid two-tone gray finish. It is factory assembled and shipped complete with burner, fan, and protectorelay, thermostat, and safety switch in the fan compartment.



Snack Bar Unit Serves Hot Dogs, Cokes

KEY NO. E-145

ALLENTOWN, Pa.—A snack bar with refrigerated storage space for 1,000 hot dogs and a 45-gal. capacity refrigerated barrel with syrup tank and carbonator has been introduced by Home & Hotel Equipment Co.

Called the Homehoe Snack Bar, the unit furnishes grilling facilities for 300 hot dogs an hour on a roller type grill. Space for 300 buns is provided in an electric bun warmer beneath a maple counter top.

A cash register platform, stainless steel sink, paper cup dispensers, and two waste receptacles are also furnished.

Perfex Fan-Limit Control Prevents Heat Damage

KEY NO. E-144

MILWAUKEE—Smaller, lighter, and more compact is the claim for model 480 fan-limit control designed by Perfex Corp. for gas, coal, or oil-fired systems. Factory set single-pole, single-throw limit switch prevents damage to installation due to excessive temperatures.

Safe limit lever system checks every fan cycle. Both the fan switch and the limit switch have

fixed differentials and are actuated by a single thermal element which can be furnished in various lengths and responds instantly to temperature changes, according to Perfex.

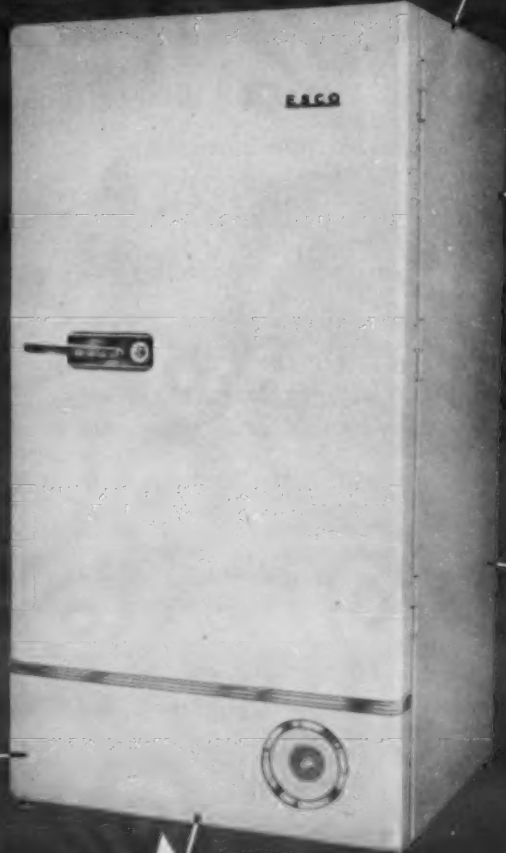
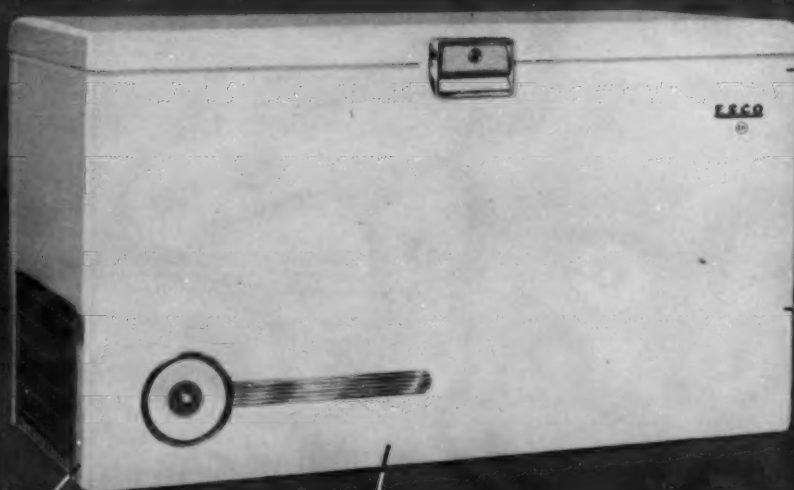
Control features powerful solid liquid fill, single stainless steel diaphragm actuator for both fan and limit, fully enclosed dust-tight switches and summer settings for continuous fan operation. Mechanism incorporated in the design eliminates danger from control failure.

When model 480 goes into "fail safe" position, the limit switch opens permanently.

They're Here! The Finest
Line of Freezers Ever Built by

ESCO

BOTH CHEST TYPE AND UPRIGHT MODELS
Chest Sizes: 14-18-23-28 Cu. Ft. Upright: 20 Cu. Ft.



- 1 Quiet as a whisper
- 2 Radiant shell condenser, non-sweat construction
- 3 More storage capacity
- 4 Less floor space
- 5 Lower price per cubic foot

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write for full information and prices

ESCO

ESCO CABINET CO.
West Chester, Pa.

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Key No. Key No.
Key No. Key No.
Key No. Key No.

Products Advertised
(list name, page, and issue date)

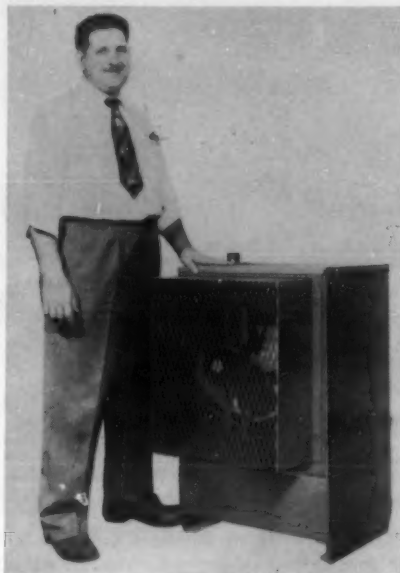
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Name Title
Company
Street
City Zone State
Type of Business

MAIL THIS FORM TO

AIR CONDITIONING & REFRIGERATION NEWS
Readers Service Dept.
450 W. FORT ST. DETROIT 26, MICHIGAN

What's New (Con't)



Water Saver Uses Copper On Wetted Deck Surfaces

—KEY NO. E-148—

WEST HARTFORD, Conn.—First water savers to have all copper construction of wetted deck surfaces and eliminators have been announced by the Bush Mfg. Co. Company officials point out that since copper cannot rust or rot, this type of construction eliminates the deterioration problem common with other surfaces.

Another "first" feature of the new Bush line is interchangeability of parts. The unit can be arranged as the CDT cooling tower or IEC evaporative condenser merely by utilizing either the all copper "Inner-Fin" coil or the copper decking. Whichever type water-saver is desired can be equipped with either blower fan or propeller fan.

Bush officials explain that with this four-way flexibility, complete stocks can now be maintained without carrying a big inventory.

Waterless Cooling Unit For Basementless Home

—KEY NO. E-149—

CINCINNATI—A new waterless cooling unit said to permit air conditioning in the most compact basementless home using a counterflow furnace has been announced by Williamson Heater Co. here.

Its new counterflow "AIRE-refrigeration" unit, incorporated into the perimeter heating system, is reported to provide efficiency equal to other type systems, yet requires no additional floor space.

The evaporator coil of the cooling unit is located in the enclosure upon which the furnace is mounted. The waterless condensing unit is located outdoors with connections made through a 3-in. pipe concealed in the floor of slab floor houses or under the floor of crawl space houses.

The outdoor unit contains the compressor, condensing coil and fan, receiver, dual pressure control, and sight glass. Only five major electrical and two refrigerant line connections are required on the job, the company further stated.

The refrigerant liquid and suction lines and the condensate drain pipe travel from the outside unit to the coil enclosure through a 3-in. diameter, 24-gauge galvanized pipe installed in the floor.

USE THE COUPON!

For "easy-to-get" product information . . . Use Key No. for fastest service.

B & G Offers New ASME Pressure Relief Valve

—KEY NO. E-146—

MORTON GROVE, Ill.—Addition of another ASME rated pressure relief valve to the firm's line was announced recently by R. E. Moore, executive vice president of Bell & Gossett Co. here.

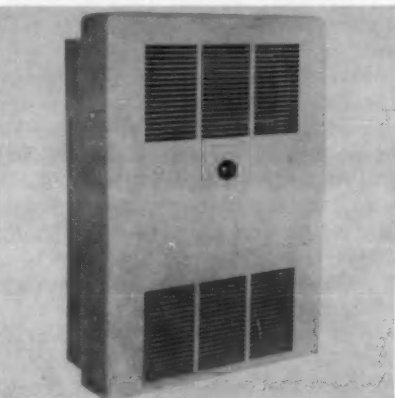
The new valve will be called the #750 and has a relieving capacity of 750,000 B.t.u./hr. It, like all other B & G ASME relief valves, employs a new type of silicon disc seat.

"Thorough tests have proven this material to be impervious to excessive temperatures and but a very small pressure differential is required to close the valve after pressure is relieved," the company said.

"The possibility of steam flash is thus eliminated and positive seating insured under all conditions."

Other ASME relief valves available are the #175, #250, #350, #480, and #1050 sizes. Each number refers to the valve capacity in thousands of B.t.u./hr. when relieving at 30 p.s.i., according to the manufacturer.

ASME valves can be furnished for pressure settings from 15 p.s.i. through 125 p.s.i. Catalog GD-1154 is now available on the company's full line of valves.



Low-Priced 'Dual-Vector' Introduced by Unarco

—KEY NO. E-147—

CHICAGO — A new hot and chilled water heating and cooling system providing year-round air conditioning "at a startlingly low price" has been developed by Union Asbestos & Rubber Co. engineers, it was announced recently by Chester S. Stackpole, general sales manager of the Heating and Cooling Div.

The Unarco "Dual-Vector," Stackpole said, is as easily installed in existing wet-heat structures as it is in new buildings. He explained:

Forced hot water circulated through the unit furnishes heat in winter and chilled water circulation provides air conditioning during the summer, Stackpole said, adding:

"A unit fan control gives individual room temperature and humidity capacities, which can be operated either thermostatically or by manual settings."

"Only rooms actually in use need be heated or cooled, which results in a substantial saving in operating cost to the user," Stackpole explained.

"The Dual-Vector can be easily and quickly installed between the studding, and its small, compact size takes up a minimum of wall space," according to the manufacturer.

The units, Stackpole pointed out, are used in series and are designed for use with one or two-pipe systems.

Milk Dispenser Features Single-Hand, Easy-Lift Bar

—KEY NO. E-1410—

GLEN RIDDLE, Pa.—Sunroc Refrigeration Co. has announced that its new revised model M-1 milk dispenser features an exclusive single-hand, easy-lift bar to facilitate comfortable and fast operation.

"This device makes it possible for the operator to use only one hand to hold the paper cup or glass and dispense the milk simultaneously," it was explained.

"Either left or right hand can be used with equal convenience, and a slight wrist pressure against the bar operates the dispensing mechanism."

"Also, the revised design of the model M-1 incorporates shut-off jaws which positively eliminate all after-drip."

Sunroc claims the new unit "is approved where regulations formerly barred the use of milk dispensers."



Faster Turnover of Dairy Products with WARREN'S



Only 34 1/2 inches wide, for easy clearance through a single 36-inch door.

Sales Maker!

A profitable sales maker for dairy products . . . does double duty too by introducing self-service packages of wieners, sausage, bacon, etc.

All in all, a versatile, compact unit, yet built for end-to-end installation with smooth, unbroken lines.

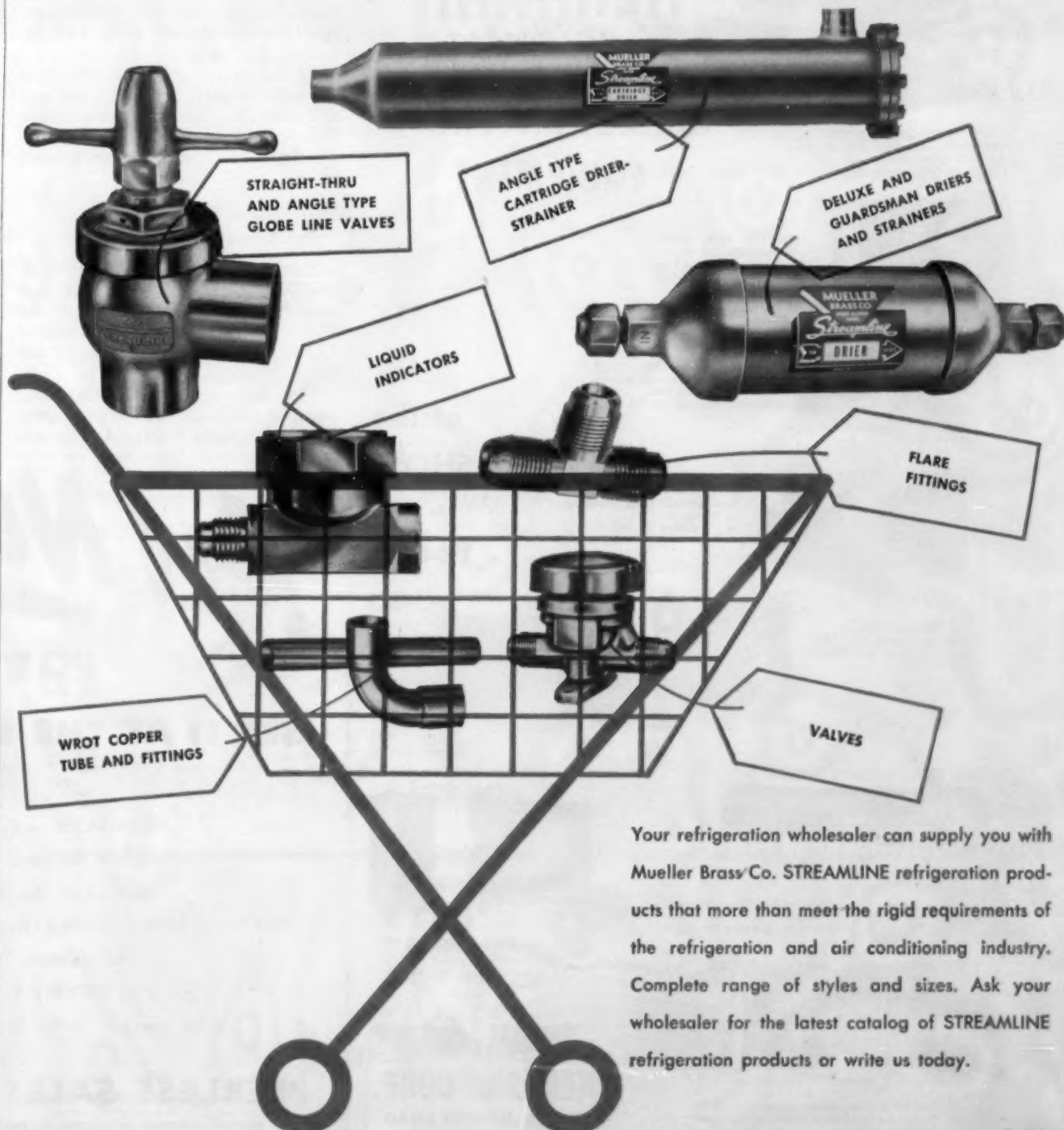
Full-color descriptive literature is now available. Write for it . . . it can introduce you to substantially more profits in your business.

WARREN REFRIGERATORS

P.O. BOX 1436, ATLANTA 1, GA. • EXPORT DIVISION: 354 S. SPRING STREET, LOS ANGELES 13, CAL.

ONE STOP SHOPPING FOR ALL REFRIGERATION PRODUCTS

MUELLER BRASS CO. MANUFACTURES A COMPLETE LINE OF VALVES, DRIERS, FITTINGS AND ACCESSORIES FOR EVERY NEW COMMERCIAL INSTALLATION AND EVERY REPLACEMENT NEED . . .



Your refrigeration wholesaler can supply you with Mueller Brass Co. STREAMLINE refrigeration products that more than meet the rigid requirements of the refrigeration and air conditioning industry. Complete range of styles and sizes. Ask your wholesaler for the latest catalog of STREAMLINE refrigeration products or write us today.

MUELLER BRASS CO.

PORT HURON 9, MICHIGAN

The MIAMI STORY: Details of \$14,000,000 Fontainebleau Hotel's 1,050 Hp. Air Conditioning System Furnishes Fascinating Chapter In Fabulous Tale of an American 'Dream Place'



MOST LUXURIOUS RESORT IN THE WORLD is the claim for the new Fontainebleau hotel in Miami Beach, Fla. The \$14 million hotel contains 1,050 hp. of air conditioning.

By George M. Hanning

MIAMI BEACH, Fla. — Helping the brand new \$14,000,000 Fontainebleau hotel here live up to its boast of being the most luxurious resort in the world is a 1,050-hp. York air conditioning system geared to provide temperatures controlled to within a fraction of a degree.

The system, which is based on seven 150-hp. York model V/W compressors, contains a number of features that are as extraordinary as the ultra-glamorous building it serves.

The Fontainebleau, which opened

in gala fashion on Dec. 18, is a 14-story arc-shaped structure located on the old Firestone estate at Collins and 44th St. here. The hotel is decorated and furnished entirely in French Provincial style. It contains 560 guest rooms and has 250 cabanas.

Designed by Maurice Lapidus, its 14-acre grounds contain a putting green, tennis courts, landscaped gardens, and two swimming pools—one shaped like a kitten for children.

The Fontainebleau's main lobby contains 17,000 sq. ft. of space, in-

The Miami area, one of America's "dream places" which nearly every American hopes to see at least once before he dies, has a sub-tropical climate which is part of its great attraction. That same climate also makes the Miami area one of the nation's greatest markets for air conditioning equipment. And despite the fact that it is primarily a vacation spot, it is one of the fastest-growing areas, population-wise, in the entire country.

What's it like to do business in the air conditioning and refrigeration field in that part of the country? Assistant Editor George M. Hanning, after spending several weeks in the Miami area, has written a series of articles on various phases of the business.

These articles are not to be viewed as a comprehensive survey of the market or a specific "who sold what," but rather as a report that will give readers a "feel" of how business is done in the Miami area.

Air conditioning of the big resort hotels has been a big part of the volume, and this article describes the installation for the newest and biggest of these hotels — the Fontainebleau (which was featured in the Jan. 17 issue of "Life" magazine).

cluding a main dining room seating 900 persons banquet style. The grand ballroom will hold 1,250 guests, while the "Le Ronde" night club will accommodate 500 persons on its three levels. There isn't a post in the bowl-shaped night club, where the dance floor can be raised and lowered hydraulically.

The air conditioning system will produce 966 tons of refrigeration and has a connected load of 1,173 tons, according to Louis H. Stoll, chief engineer for Hill York Corp. Hill York designed, sold, and installed the job.

Of the connected load, 761 tons is used to cool public places and 412 tons is disseminated through 563 individual room units of approximately ¾-ton capacity each to the guest rooms.

Salt Water Wells Used For Condensing Water

Edmund Fritz, assistant engineer on the job, pointed out that one of the unusual features of the Fontainebleau system is its use of 117-ft. deep salt water wells for condensing water.

The salt water is continuously pumped through two large marine type condensers flowing at the rate



SEVEN 150-HP. YORK COMPRESSORS, shown being installed in the basement here, are the heart of the air conditioning system. Salt water pumped from wells is used for condenser water. Fresh water is circulated through a closed circuit for cooling.

of 1,094 g.p.m. through one condenser and 826 g.p.m. through the other. One of the three-pass, shell and tube type condensers is 28 in. in diameter and the other is 30 in. Both are 12 ft. long. Both use 16-gauge arsenical brass, admiralty metal tubes.

The larger is equipped with a 30-hp. pump and the smaller with a 25-hp. pump. The larger is combined with four of the compressors and a 40-in. by 12-ft. water chiller into one system. The smaller is hooked up with the other three compressors and a 36-in. by 12-ft. chiller into a second system.

Salt water enters the condensers at 78° F. and leaves at 93° F. Fresh water is used in the water chillers, entering at 54° F. and leaving at 46° F. Water circulates through the larger chiller at 1,641 g.p.m. and the smaller at 1,239 g.p.m. "Freon-12" is the refrigerant.

For cooling, the chilled water thermostat varies its branch air pressure to start the compressors in sequence to maintain the set chilled water temperature. A solenoid valve provides power failure protection and an adjustable pneumatic time delay control provides a time delay between the starting of compressors after a power failure or equipment shutdown. Auxiliary switches are provided to change the compressor sequence.

These controls are inoperative on the heating cycle.

Another unusual feature, according to R. S. Lafferty, Hill York vice president, who sold the job, is that pre-cooled and filtered 100% fresh air is supplied to the corridors of guest room floors. The fresh air is then transferred through aluminum or stainless steel grilles to individual units

horizontally mounted in a furred-in ceiling over the room entrance ways.

Air Drawn from Corridors Aids In Hurricane Season

By drawing fresh air from the corridor rather than the outside, all outside fresh air openings are eliminated, an advantage during the Florida hurricane season, Lafferty pointed out.

Air to the corridors is furnished through two 52.7-ton "Recold" air conditioning units installed in penthouse rooms on the roof, one at each end of the building. Interior air shafts down the side of the structure feed the proper amount of air to each floor corridor.

The units in the guest rooms are thermostatically controlled so that the guests can adjust for any temperature they desire. On these units, the room thermostats modulate the water valve to maintain an even room temperature summer and winter. When the blower fan is off, a solenoid air valve closes the water valve.

For cooling the public spaces, 20 other Recold air conditioning units are employed. These are installed at various locations about the building close to the spaces they are to air condition.

Largest of these is a 118.4-ton unit for cooling the ballroom. Next in size is a 100-ton unit to air condition the supper club.

Other units include 9.2 tons for the employees cafeteria, 43.9 tons for the coffee shop, 15.2 tons for the east side stores, 20.1 tons for the west side stores, 23.6 tons for the club room, 12.7 tons for the beauty shop, 26.1 tons for the basement cocktail lounge, 25.6 tons

(Continued on next page)

WATER SAVER
Model QT. 3 and 5 ton sizes. Bulletin QT-1.

AIR CONDITIONING BLOWER UNITS—13 sizes. 300 to 21,600 CFM. Horizontal or Vertical. Catalog No. AC-1.

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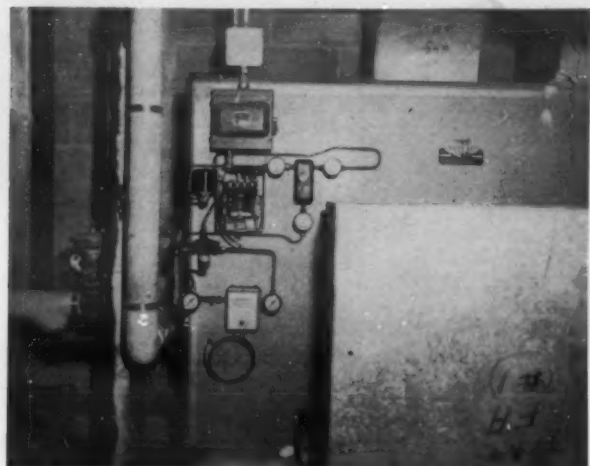
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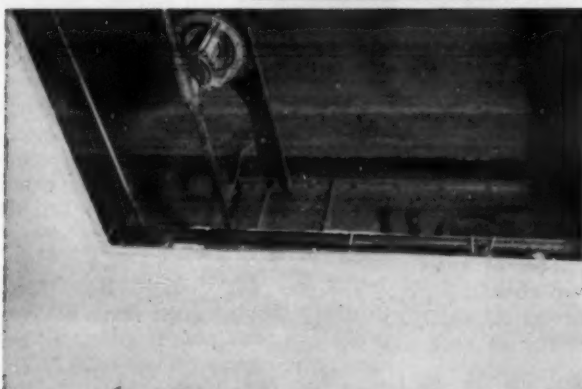
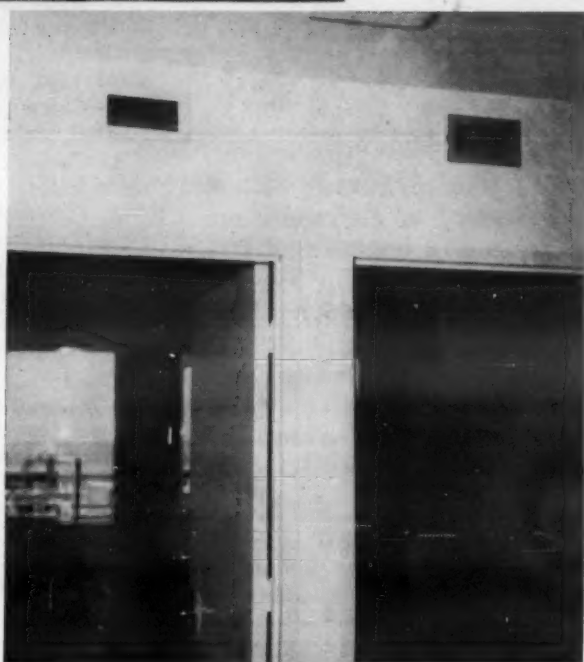


See You in Philadelphia
BOOTH S-41



22 AIR CONDITIONERS such as this one are scattered throughout the building, drawing in fresh outside air, filtering and cooling it, and distributing it to the areas to be air conditioned. The steam coil is used for reheat only to control humidity.

GUEST ROOM UNITS are hidden above the entranceway to the room and draw all their fresh air from the hallway rather than directly from the outside. Two rooftop air conditioners supply conditioned air to the hallways.



LOOKING UP THROUGH THE CLOSET ceiling, you can see one of the units used for cooling guest rooms. The water regulating valve is at top left. These units have about 3/4-ton capacity each.

Fontainebleau Hotel Installation --

(Concluded from preceding page) for the private dining room, 72.8 tons for the main dining room, 10.8 tons for the TV and writing room, 21 tons for the lobby cocktail lounge, 22 tons for the general office, reception lobby, and PBX room, 56.2 tons for the main lobby, 21.5 tons for the card room and private dining room, and 4.86 tons each for four penthouse suites.

A feature of all the air conditioning units is that they are fitted with separate steam coils for reheat purposes. The steam coils are used only for humidity control and are governed automatically by humidistats.

For those brief periods of night and early morning on occasional winter days when heating is called for rather than cooling, the same water that is used for chilling is used for heating. The only difference is that it is run through the

steam heat exchanger before passing through the cooling coils.

The control system for cooling and heating works this way. When the blower fan starts, a solenoid air valve passes air to the control system. When the fan stops, the controls become inoperative.

For cooling, a cumulator positions a three-way air valve so that the dewpoint thermostat modulates the three-way mixing valve controlling the chilled water flow. The return air thermostat or room thermostat modulates the reheat valve to maintain proper temperatures.

For heating, the cumulator exhausts branch pressure to the three-way air valve so that the return air thermostat or room thermostat modulates the three-way mixing valve controlling the hot water flow and steam valve to provide heat as required.

Installation of the air condition-

ing system took six months, reports Lyle Copenhauer, construction superintendent for York Hill, and was finished nearly two weeks ahead of the contract deadline. Men worked round the clock to get the job installed, he noted. At peak periods there were 30 refrigeration men and 20 sheet metal men assigned to the work.

He pointed out that all sheet metal work was fabricated right on the site rather than in the shop to speed operations. This is the first time that York Hill has done this, he noted.

J. C. Bates, air conditioning engineer for the Fontainebleau hotel, has a staff of eight men to operate the equipment on a 24-hour basis.

In addition to the air conditioning system, Hill York also installed all remote refrigeration equipment for the luxury resort. This included compressors totalling 50 hp., 19 walk-in coolers for food preservation, and cube and flake ice makers with a total daily capacity of 15,500 lbs. of ice.

Six of the cubers are located in various spots throughout the building as needed, while two large ones producing flake and cube ice are installed in a special ice making room in the basement. The machines are set up so that they feed directly into a big ice storage room on the lower lobby level.

Fritz said that Hill York did not furnish the reach-in boxes, but supplied the refrigeration for them.



NINE Halstead & Mitchell cooling towers operate on the roof of the new Wallace Shopping Center at Enid, Okla., and are claimed to save over 95% of the cooling water used for the center's air conditioning and refrigeration units.

Shopping Center Installs 9 Cooling Towers on Roof for 95% Water Saving

ENID, Okla.—Refrigerant condensing problems for the unitary installation of air conditioning equipment at the huge Wallace Shopping Center here was solved in a way that took no valuable floor space, through the installation of nine Halstead & Mitchell cooling towers on the roof of the shopping center.

Each of the individual businesses in the shopping center has its own air conditioning unit and cooling tower. In all, there are one 20-ton, three 15-ton, two 10-ton, and three 5-ton cooling towers installed on the 33,500-sq. ft. roof.

Installation was made by the Collins Air Conditioning Co. of Enid. The water-cooled systems were selected because of the need for high-efficiency systems to handle the high air conditioning

heat loads in the shops, and the big refrigeration load from the supermarket.

Also, the installation in the supermarket consisted of a battery of small compressors, and there would have been considerable extra problems in piping and placing of individual condensers if a water-cooled condensing system had not been used, the contractor pointed out.

All of the Halstead & Mitchell cooling towers used on the installation had the wooden wetted deck surface treated by the exclusive Koppers pressure-cresoting treatment which protects against rotting or attack by fungus.

Steel tower cabinets are protected with five individual coatings of vinyneite, vinyl zinc, and chlorinated rubber.

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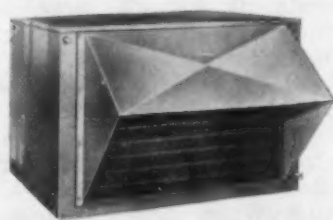


Type 224-906 Companion Units — For all-season air conditioning. The heating unit is oil- or gas-fired (convertible) — with 80,000, 100,000, 125,000, and 150,000 Btu input. The Type 906 cooling unit is available in 2-hp and 3-hp sizes — and can be installed with any winter air conditioner. Has own blower. Each size of the heating unit may be interchanged with either of the cooling models, for real flexibility.



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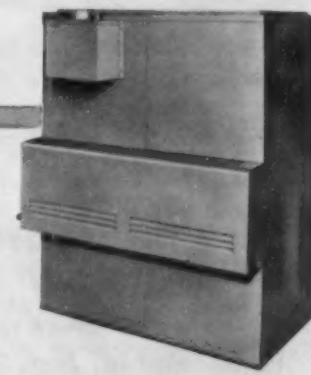
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Type 907 Air-cooled Condenser — For converting water-cooled units to air-cooled. Uses air-conditioning unit compressor. Weatherproof for outside installation. Available in 2, 3, and 5 hp.



Type 908 Air-cooled Condensing Unit — For use with Type 900 coil unit. Weatherproof for outdoor installation. Quiet, efficient. Available in 2, 3, and 5 hp. Type 902 remote water-cooled condensing unit also available.



Type 128-928 Combination Heating and Cooling in one compact casing. For closet, basement or utility room installation, easily accessible from front. Heating is gas- or oil-fired, 100,000 Btu input. Cooling is 2 or 3 hp.



Type 903 Self-contained Cooling Unit — Can be installed with any new winter air-conditioning system — or added to existing systems. Contains complete enclosed refrigeration system in one compact package. 2, 3, and 5 hp. Water-cooled.



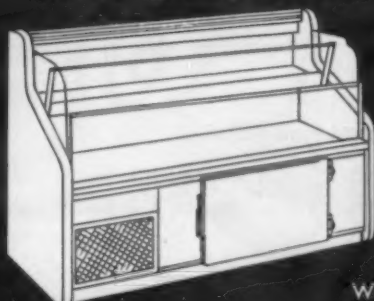
Type 904 Self-contained Cooling Unit — For installation in stores, restaurants, etc., — or with duct systems in homes with radiator or radiant heat. Complete refrigeration system with blower and filters. Can be installed with steam coil for heating. Available with discharge grille, or can be used with ductwork. 2, 3, 5, 7 1/2, 10 and 15 hp.



Type 910 Recessed Summer Conditioner — For cooling new and old homes, motels, apartments, office buildings, and homes with radiator heat. Installs under window between two standard studs. Air-cooled, requires no plumbing connections. 3/4-hp. and 1-hp. sizes.

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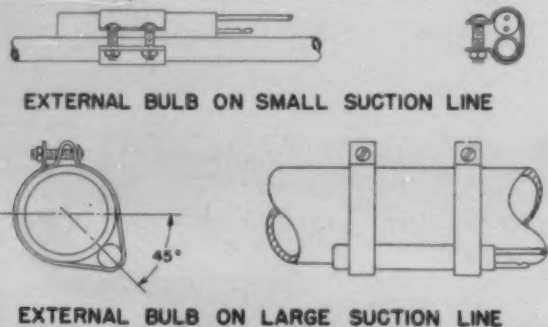


FIG. 7—Remote bulb should be attached to suction line in a position to "feel" liquid refrigerant.

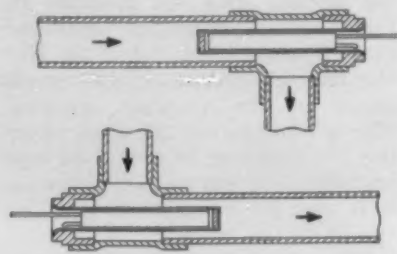


FIG. 8—Well for remote bulb increases its sensitivity.

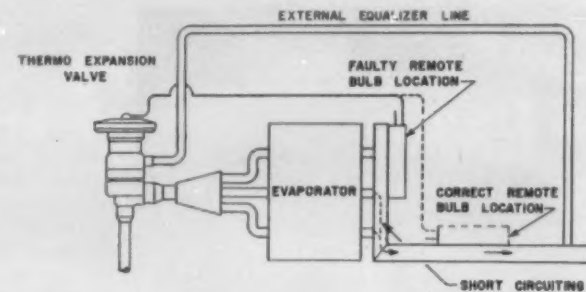


FIG. 9 shows correct and faulty locations of remote bulb.

How To Balance Refrigeration System By Selecting Proper Flow Control Device—2

By John A. Schenk, Director of Engineering, Alco Valve Co.

The external remote bulb meets the requirements of most installations. It should be clamped to a horizontal suction line near the evaporator outlet. The suction line should be cleaned thoroughly before clamping the remote bulb in place. When a steel suction line is used, it is advisable to paint the line with aluminum paint to minimize corrosion and faulty remote bulb contact with the line.

There has been some thought in the past that thermostatic expansion valve performance was not affected regardless of the location selected, on the circumference of the suction line, for application of the remote bulb. Trends in the de-

sign and function of refrigeration systems, during the last several years, indicate that a change in this viewpoint is advisable.

Many compressors are available today with the capacity reduction feature built into the compressor. Therefore, it is possible to have suction line velocities, under low load conditions, far below those at full load. Under these conditions it is possible to have liquid refrigerant, that may or may not be entrained with the oil, returning on the bottom of the suction line and separated from the refrigerant gas.

Clamping the remote bulb at the position of 4 or 8 o'clock on a hori-

"Balancing the Refrigeration System with the Aid of Proper Flow Control Devices" has been discussed before several sections of the American Society of Refrigerating Engineers by John A. Schenk, director of engineering for Alco Valve Co.

In the course of his talk Schenk describes the functions of various flow control devices, including thermostatic expansion valves, etc., and offers suggestions on application and service problems.

The talk is being published by the NEWS in several instalments, this being the second. The first appeared in the Jan. 17 issue.

zontal suction line will, by virtue of direct contact with the suction line, feel this return of liquid refrigerant much quicker than if the remote bulb was located near the top of the suction line.

If the remote bulb is located so as to prevent the thermostatic expansion valve from closing quickly, then it is possible to have a condition where, periodically, liquid refrigerant may be returned to the compressor.

On suction lines under 7/8-in. o.d., the remote bulb may be installed on top of the line. On lines 7/8-in. o.d. and over, the remote bulb should be installed at the position of about 4 or 8 o'clock. See Fig. 7.

If it is necessary to protect the remote bulb from the effect of an air stream, after it is clamped to the suction line, use a material such as sponge rubber that will not absorb water with evaporator temperatures above 32° F. Below 32° F. cork or similar material, sealed against moisture, is suggested to prevent ice logging at the remote bulb location. The use of hair felt for this purpose is not recommended.

When the remote bulb is below the water or brine level of a submerged coil, use a water proofing material or pitch that does not require heating above 120° F. in applying it to protect the remote bulb tubing and remote bulb.

When it becomes desirable to increase the sensitivity of the remote bulb, it may be necessary to use a remote bulb well as shown in Fig. 8. This is particularly true for short coupled installations, and installations with large suction lines (2 1/2-in. o.d. or larger). Remote bulb wells should be used:

1. When very low superheats are desired.
2. Where load variation produces extreme changes in suction line velocity.
3. Where large size suction lines are encountered.

Never under any circumstances should either type of remote bulb be placed where the suction line is trapped. Any collection of liquid refrigerant at the point of remote bulb location will cause irregular operation of the thermostatic expansion valve. Large fluctuations in pressure and superheat of the suction gas are usually the result of trapped liquid at the remote bulb location.

Even on properly designed suction lines, it is sometimes necessary to move the remote bulb a few inches either way from the original location to obtain best thermostatic expansion valve performance.

Always locate the remote bulb on the evaporator side of any re-

frigerant liquid to suction heat exchanger, in order to promote stability of thermostatic expansion valve control.

"Hunting" of the thermostatic expansion valve can be defined as the alternate overfeeding and starving of the refrigerant flow to the evaporator. It is recognized by extreme cyclic changes in both the superheat of the refrigerant gas leaving the evaporator and the evaporator or suction pressure. "Hunting" is a function of:

1. Evaporator design.
2. Length and diameter of tubing in each evaporator circuit.
3. Load per evaporator circuit.
4. Refrigerant velocity in each evaporator circuit.
5. Temperature difference at which the evaporator is operated.

6. Arrangement of suction piping.

7. Application of the thermostatic expansion valve remote bulb. "Hunting" can be minimized, eliminated, or avoided by:

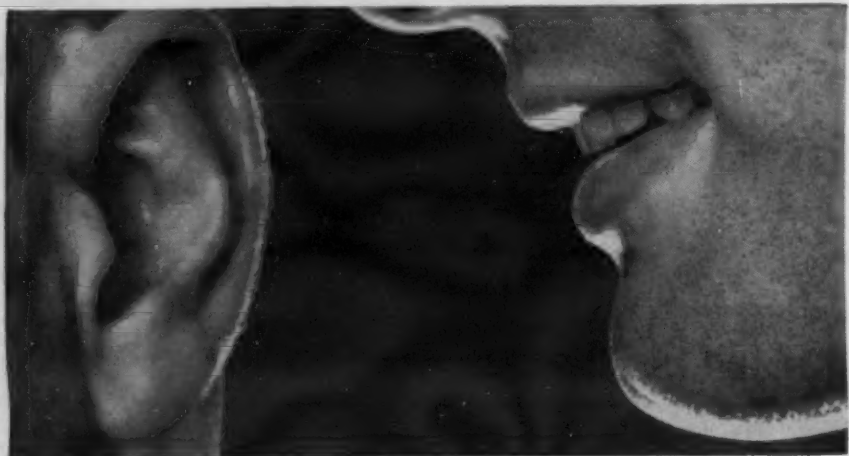
1. Correct arrangement of the suction piping.
2. Correct location of the remote bulb.
3. Correct location of the external equalizer line connection.
4. Use of the recommended power assembly charge for the range of thermostatic expansion valve operation.

The following illustrations point out some of the more common incorrect remote bulb applications that can cause thermostatic expansion valve "hunting" and "flood back." To avoid these conditions, illustrations of recommended corrections applicable to the piping and remote bulb location are also shown.

Fig. 9 illustrates the incorrect application of the remote bulb on the suction header of an evaporator. With poor air distribution through the evaporator, liquid refrigerant can pass through some evaporator circuits without being evaporated and without affecting the remote bulb; this can cause "flood back." The correct remote bulb location is shown by dotted lines.

The correct remote bulb location in this instance does not improve the poor air distribution, but merely prevents "flood back." The poor air distribution must be ap-

(Continued on next page)



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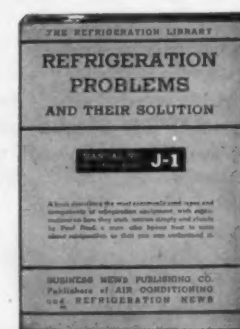
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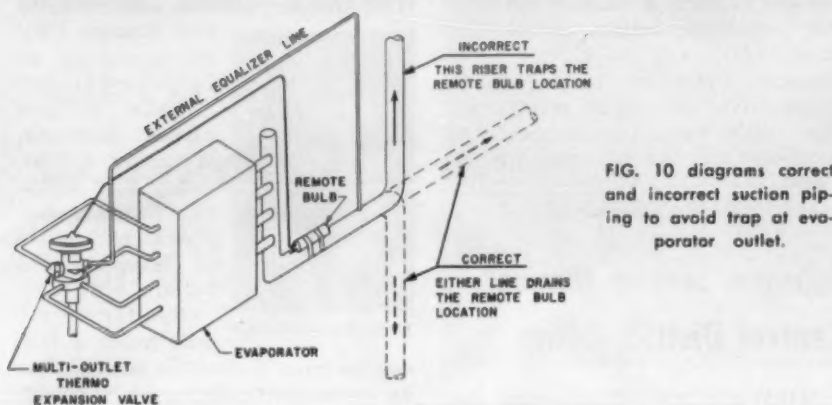
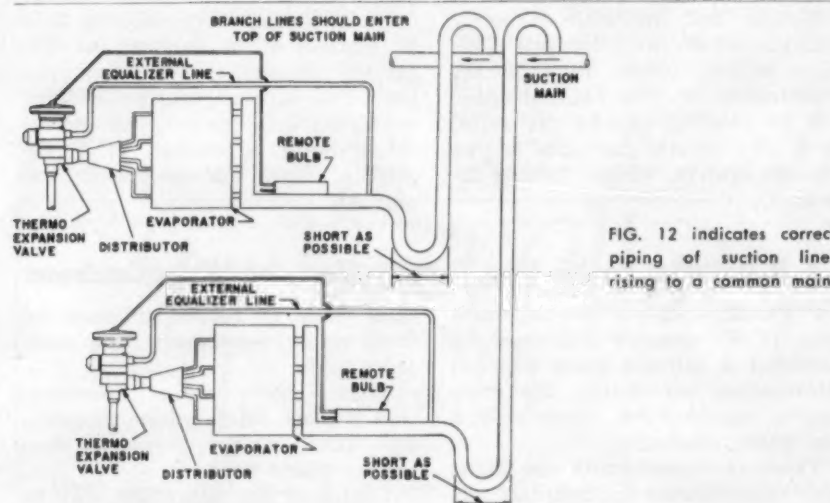
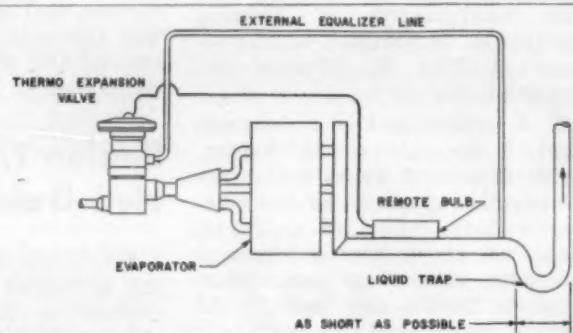


FIG. 11 shows recommended remote bulb location and piping for rising suction line.



Balancing a Refrigeration System--

(Continued from preceding page)

In Fig. 10, liquid refrigerant and oil can trap in the suction line at the evaporator outlet if the vertical suction riser is used. This arrangement of the suction line can cause the loss of operating superheat and result in irregular thermostatic expansion valve operation due to the alternate drying and filling of the trap.

If the thermostatic expansion valve operation becomes too erratic, liquid may be blown back to the compressor by the gas which forms behind in the evaporator. The use of either dotted suction line, in Fig. 10, will correct this condition and provide drainage away from the remote bulb location.

Fig. 11 illustrates the proper remote bulb location to avoid trapped oil or liquid refrigerant from affecting the thermostatic expansion

valve operation when the suction line must rise at the evaporator outlet.

Liquid refrigerant or oil in the trap during the "off" cycle will not affect the remote bulb, and can boil off without "slugging" to the compressor. This piping arrangement is often used deliberately on large installations to prevent "slugging."

A trapped or partially trapped suction line at the remote bulb location will cause poor thermostatic expansion valve and evaporator performance. Therefore, always arrange the suction line piping from the evaporator so that oil and liquid refrigerant will be carried away from the remote bulb location by gravity.

Fig. 12 shows the recommended suction piping where two or more thermostatic expansion valves are installed and where it is necessary to arrange the suction piping

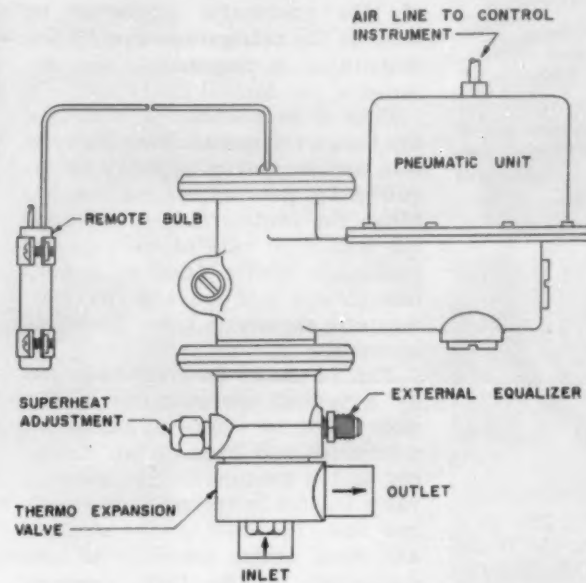


FIG. 13 is a thermostatic expansion valve equipped with pneumatic over-ride modulation.

to prevent the refrigerant gas of one evaporator from affecting the remote bulb temperature of another thermostatic expansion valve.

The external equalizer line, when required, should be installed beyond the point of greatest pressure drop. As a general rule, when the pressure drop through the evaporator is unknown, it is safest to connect the equalizer line to the suction line at the evaporator outlet on the compressor side of the remote bulb location. See Fig. 12.

Using this method, thermostatic expansion valve operation is unaffected by the normal pressure drop, which may exist from the

valve outlet to the suction line. When the external equalizer is connected to a horizontal line, connect it to the top of the line in order to avoid oil logging in the equalizer line as shown in Fig. 12.

When the pressure drop through the evaporator is not in excess of the following values, it is permissible to install the external equalizer connection at the evaporator inlet with one of the distributor tubes. These pressure drop values are given with reference to "Freon-12" refrigerant:

2.5 p.s.i. in the air conditioning range.
1.5 p.s.i. in the commercial range.

0.5 p.s.i. in the low temperature or food freezer range.

When the pressure drop through the evaporator is not in excess of twice the above values, it is permissible to install the external equalizer connection on one of the return bends midway through the evaporator.

Locating the external equalizer connection at the evaporator inlet (similar to application of internal equalizer type valve) or midway through the evaporator will minimize "hunting" of the thermostatic expansion valve because the forces that operate the valve have a better chance to check one another and prevent over-travel of the valve in either direction.

This method of locating the external equalizer connection is especially important when the thermostatic expansion valve is applied on an evaporator which also requires the use of an evaporative pressure regulator. It assists in stabilizing the modulation of each control valve when they are used together and helps to prevent "hunting" between them.

Where a regulating valve is installed in the suction line, the external equalizer line for the thermostatic expansion valve must be connected on the evaporator side of such a regulator.

On a multi-evaporator system, where each evaporator is fed by a separate thermostatic expansion valve, the external equalizer lines

(Continued on next page)

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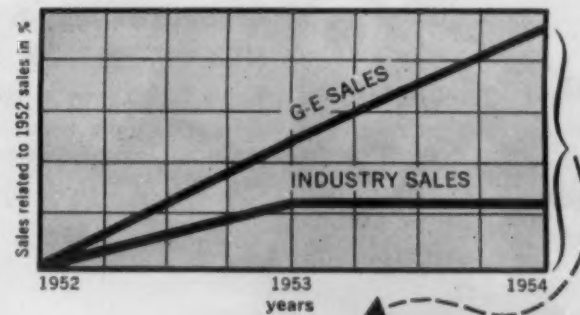
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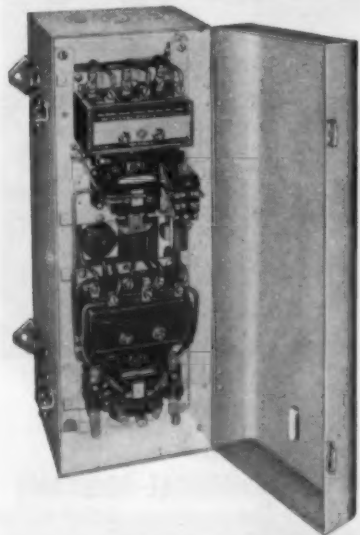
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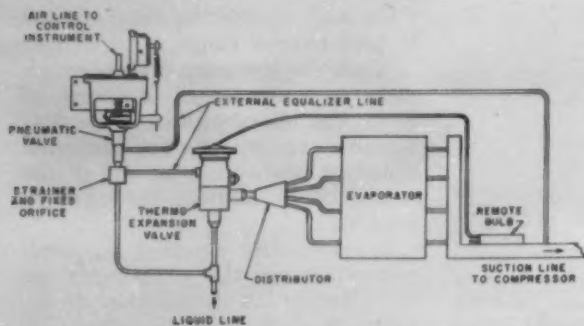


FIG. 14 diagrams use of thermostatic valve with pneumatic modulating valve.

Balancing Refrigeration Systems--

(Continued from preceding page) must be located so they will be free from the effect of pressure changes in the evaporators fed by the other thermostatic expansion valves. See Fig. 12.

The equalizer lines should not be joined together in one common line to the suction line under any circumstances. If the individual suction lines from evaporator outlets to the common suction line are short, install the external equalizer lines in the individual evaporator suction headers or connect them to the evaporators as previously described.

Do not merely cap or plug the external equalizer connection on a thermostatic expansion valve as this can prevent proper operation. If the thermostatic expansion valve is furnished with the external equalizer feature, the external equalizer line must be installed, unless the conversion to

internal equalization is made in the valve.

By over-riding the thermostatic expansion valve's opening pressure, it is possible to throttle the liquid refrigerant flow and modulate the evaporator capacity in order to vary the temperature or humidity of the fluid being cooled in accordance with the load requirement or desired rate of cooling.

This may be accomplished in several ways. However, it is advisable to use some means of controlling compressor capacity, when any of these methods are employed, in order to avoid abnormally low suction pressures.

Fig. 13 shows a typical thermostatic expansion valve with a pneumatic unit which can over-ride the opening pressure of the thermostatic expansion valve's remote bulb. The operation of the pneumatic device is directed by the action of a control instrument. The function

of this pneumatic device is to throttle the refrigerant flow to the evaporator in response to the demand of the control instrument.

Thus it is possible to modulate the liquid refrigerant flow between zero and maximum capacity as required by the control instrument. When the control instrument calls for maximum rate of cooling, the pneumatic device assumes a non-interference position and the thermostatic expansion valve functions normally.

Fig. 14 shows an evaporator fed by a typical thermostatic expansion valve to which is connected a strainer and fixed orifice assembly and a pneumatically operated valve located in the external equalizer line. The inlet of the strainer and fixed orifice assembly is also connected to the high pressure liquid refrigerant line. The pneumatically operated valve is positioned in response to a control instrument.

When the control instrument requires maximum rate of cooling, the pneumatic valve is wide open and the small bleed through the fixed orifice assembly is vented to the suction line; the thermostatic expansion valve then functions normally.

When the control instrument requires a decrease in the liquid refrigerant flow to the evaporator, the pneumatic valve is throttled. Due to the bleed through the fixed orifice assembly, the pressure increases underneath the thermostatic expansion valve diaphragm,

partially closing the valve and throttling the flow of the refrigerant.

As a result of this reduced refrigerant flow to the evaporator, the superheat of the refrigerant gas leaving the evaporator increases to form a balance between the pressures acting across the thermostatic expansion valve diaphragm. Therefore, it is possible to modulate the liquid refrigerant flow below maximum capacity as required by the control instrument.

(To Be Continued)

Johnson Service Moves Central District Office

MILWAUKEE—The central district headquarters of Johnson Service Co., Milwaukee, is now located at 2201 W. Howard St., Evanston, Ill.

K. A. Wright, Johnson vice president, is manager of the district, which is one of three major administrative divisions of the company's field organization. It includes all direct branch offices in the area extending from Pittsburgh to Omaha and south to the Gulf of Mexico.

Wright and his staff formerly headquartered in Johnson's Chicago branch office at 1355 W. Washington St. The vacated space will be used to expand the sales, shop, and service facilities of the Chicago branch, Wright further indicated.

Niedermeier Heads New Sporlan Office In K. C.

ST. LOUIS—Sporlan Valve Co. has announced the appointment of R. E. Niedermeier to take over its new Kansas City office located at 7110 Virginia St.



This office serves Montana, Wyoming, Colorado, New Mexico, Kansas, Nebraska, and parts of Missouri and Iowa. Niedermeier, who holds a B.S. degree from Evansville college, has an extensive background in refrigeration and air conditioning. He was formerly service manager of one of the major manufacturing companies in the industry.

Region 7, ARW, Sets New Date for Meeting

EAST ST. LOUIS, Ill.—A meeting of Region 7 of the Air Conditioning & Refrigeration Wholesalers will be held in the President hotel in Kansas City, Mo., on Feb. 25 instead of in January as originally planned, it was announced here. The date originally scheduled conflicted with the dates of the air conditioning exposition in Philadelphia, the announcement explained.

H & M Describes Double-Tube, Counter-Flow Sea Water Condenser

PITTSBURGH—A two-page bulletin (C-4) recently published by Halstead & Mitchell gives detailed information concerning the company's double-tube, counter-flow sea water condenser.

These cleanable units are made with cupro-nickel water tubes and naval brass headers, and are for marine use and for all other "bad water" conditions. They provide up to 50% more heat transfer sur-

face than is found in standard fresh-water condensers, the company says.

Charts show water consumption versus inlet water temperature and water pressure drop versus water flow.

Copies of the literature may be obtained by writing for Bulletin C-4, Halstead & Mitchell, Bessemer Bldg., Pittsburgh, Pa., the company says.

"Now is a good time to bring your Lehigh file up to date"—



says the LEHIGH TEAM

Catalog of Systems and Units for REFRIGERATED TRANSPORTATION

Complete information and specifications on Lehigh's new PACKAGED UNITS for fleet owners, carriers, body builders, refrigeration contractors. Also includes Lehigh REMOTE TYPE truck units.

Catalog of Lehigh's new HERMETIC CONDENSING UNITS

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Illustrations, capacities and specifications of all Lehigh A.S.R.E. rated air cooled units, water cooled units, air-water cooled units 1/4 H.P. thru 5 H.P.



You'll want, also, Lehigh's new Parts Price List and Interchangeability Tables, Unit Price Lists, catalog and information on Lehigh Automatic Defrost Units, and other important materials. Any or all are yours for the asking! See your Lehigh jobber or write.



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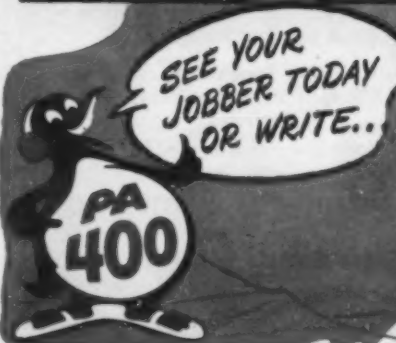
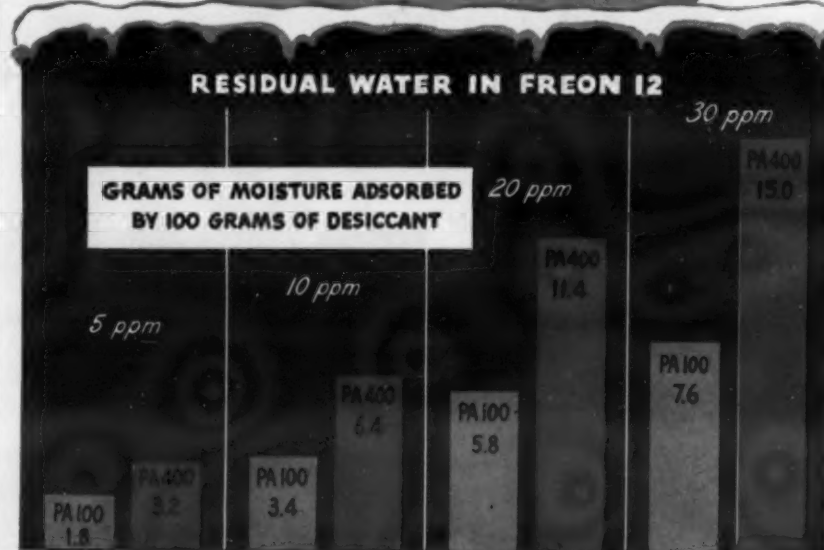
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PA 400 DAVISON'S NEW Refrigeration Desiccant

WITH GREATER MOISTURE ADSORPTION CAPACITY
Up to 98% increase in moisture capacity

The Davison Chemical Corporation has long been a leading producer of refrigeration desiccants and the manufacturer of PA 100 — the top desiccant in the field. Now, after many years of research, they have produced PA 400 — a refrigeration desiccant with a greatly increased adsorption capacity.

Tests run on the moisture adsorption capacity of PA 400 in Freon-12 in comparison with Davison's PA 100 show up to 98% increase in capacity.



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*T.M. REG. APPLIED FOR

'Glass Bank' Uses 300 Tons Of Packaged Water Chillers For 5 Stories

By George M. Hanning

NEW YORK CITY—With 13,000 sq. ft. of glass wall on two sides—and not a window in the place, the new Fifth Ave. branch of the Manufacturers Trust Co. here literally depends on air conditioning to breathe.

The five-story "glass bank," a striking attraction to passersby on Fifth Ave. or 43rd St. in the heart of Manhattan, is cooled by two 150-ton Worthington packaged water chillers that circulate water to a central air distribution system.

Carl Morrison, who represented Worthington Corp. on the installation, said it is the first installation of Worthington packaged chillers of this size in New York



HIGH PRESSURE CHILLED AIR, discharged through the long, narrow grille running the full length of the mezzanine (in upper center of picture), counteracts the heat load coming through this 32-ft. high glass wall along the Fifth Ave. side of the Manufacturers Trust Co. in midtown Manhattan. The cool air shoots across the 8-ft. space and then upward and downward.

City and among the first in the country.

The air distribution system, he said, must operate as long as anyone is in the building for it is the only means of ventilation.

One of the many unusual architectural features, the exterior of the building is made entirely of glass set in polished aluminum frames. Sealed in place, the glass walls reduce street noise, minimize dust infiltration, and—in conjunction with air conditioning system—control the purity, humidity, and the temperature of the air.

The glass walls support no weight. They are curtains with each mullion hanging from the floor above it. This way, all steel members of the mullions are in

tension rather than in compression, allowing the mullions to be as narrow as possible—4 in.

The 22 10 by 22-ft. panes facing the second floor mezzanine are the largest in any building in the country, bank officials claim. Each pane weighs 1,500 lbs.

Despite the huge area of glass, A. Johnson, chief engineer for Manufacturers Trust, says that there is no particular cooling problem there. Rather, the critical controls are for heating only.

Little Sunlight Strikes Glass Wall

He explains that little sunlight ever strikes the glass walls. The north side facing 43rd St. never gets any direct sunlight, while tall buildings across Fifth Ave. shade the east side of the building during all but an hour or so a day.

Thus, he said, the master thermostat on the roof controls heating only. Cooling controls are located in the areas being cooled.

The two 150-ton package refrigerating systems are located in the basement of the building and are mounted on concrete blocks. These blocks, in turn, are set on 2-in. thick cork pads specially made to absorb vibration. A cooling tower on the roof serving both systems will reduce 800 g.p.m. of 95° F. water to 85° F.

Each of the systems is capable of chilling 331 g.p.m. of 50° F. water to 40° F. Water coils from the chillers run to the two air distribution systems that serve the bank. The air handling units are located in a room adjacent to the refrigerating machinery.

Air Distribution Systems Are High and Low Pressure

One air distribution system operates under high pressure to cool the outer areas next to the glass walls. The other is a low pressure system serving the interior zones.

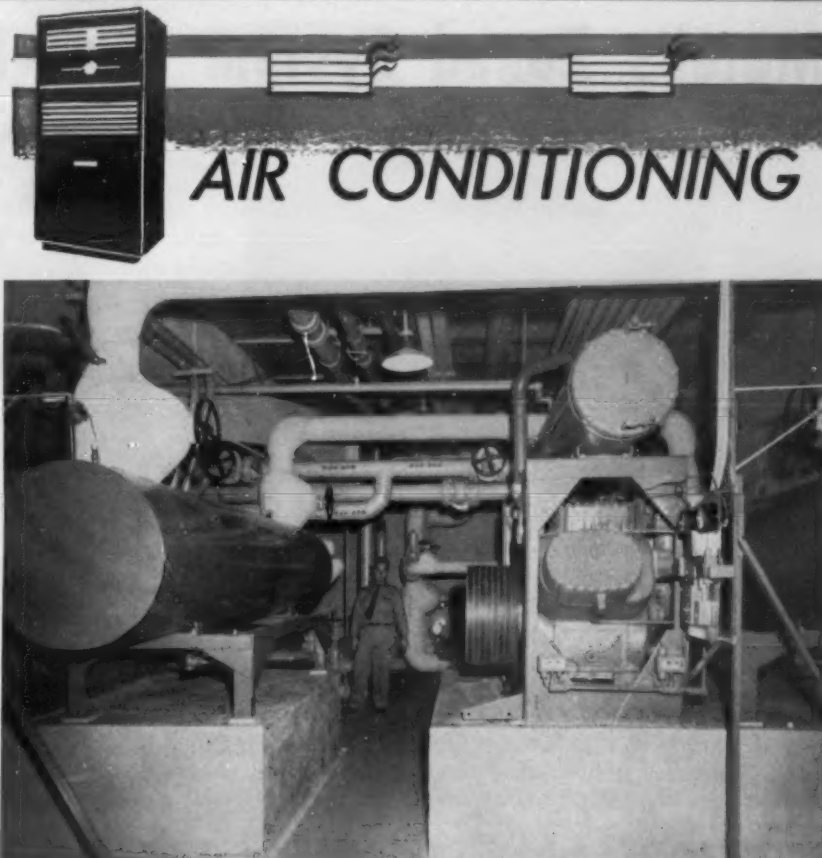
Through a damper arrangement, fresh and return air can be proportioned as they enter the ducts so that they will mix and be at the selected temperature by the time the air reaches the space to be conditioned, Johnson said. He maintains a differential of 18 to 20° F. between entering and return air on the cooling cycle.

Cool air from the high pressure periphery system is discharged through a long narrow grille along the face of the second floor mezzanine. This floor, another unusual feature of the building, is of cantilever construction. Its outer edge sets back 8 ft. from the glass wall, leaving a 32-ft. high glass surface running from the ground level to the second floor ceiling.

The cold air from the grille thus blows directly across the 8-ft. open space and then moves both upward and downward across the glass surface, effectively cooling the area.

Johnson noted that on hot days, he plans to shoot unmixed cold air against the glass wall until the air temperature has been brought down to the desired level and then to start mixing return air with it in order to maintain the given temperature.

The low pressure system for the interior zone is a standard distribution system with air discharged



TWO 150-TON Worthington packaged water chillers, first of this size in New York City, provide the cooling for the "glass bank" building. The concrete blocks on which they are mounted rest on 2-in. thick cork pads to absorb vibration.

through overhead diffusers.

As the building has been opened only since early October, Johnson has had little chance to test the cooling cycle of the system, he noted. George A. Fuller Co. was general contractor for the build-

ing. Syska & Nenessey, Inc., consulting engineers, designed the air conditioning system while Baker Smith & Co., Inc. installed it.

Skidmore, Owings & Merrill were the architects responsible for the unique design of the building.

You Can't Afford To Gamble...

When your reputation as an expert on refrigeration and air conditioning is at stake, it will pay you to deal with a manufacturer with a record of dependability.

In the long run it is the Dealer or Distributor with a good list of successful installations to his credit who gets the business—regardless of price considerations.

We at Frick Company feel it is our responsibility to furnish to the industry the finest line of refrigeration and air conditioning components which can be built. We have successfully pursued this policy for 72 years.

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Features of Frick Unit Air Conditioners

- Sides of 16-gauge Steel, Double-flanged at Edges. Removable Panels Permit Use of Air Ducts.
- Interior of Cabinet Lined with 1/2" Sound and Heat Insulation, Fire Resistant and Cemented Fast.
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- Four Rows of Finned Cooling Coils, with Air Precooling Coil Below, Which Serves Also as a Suction Superheater.
- Thermal Expansion Valve, with Individual Feeds to Coil Circuits.
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These Drayer-Hanson HH Series year-round air conditioning units—so often architect specified—give you:

- Rugged construction! Frame electrically welded
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*Architect: Walton Becket and Associates, Los Angeles. Air Conditioning Contractor: Interstate Heating and Plumbing, Kansas City.



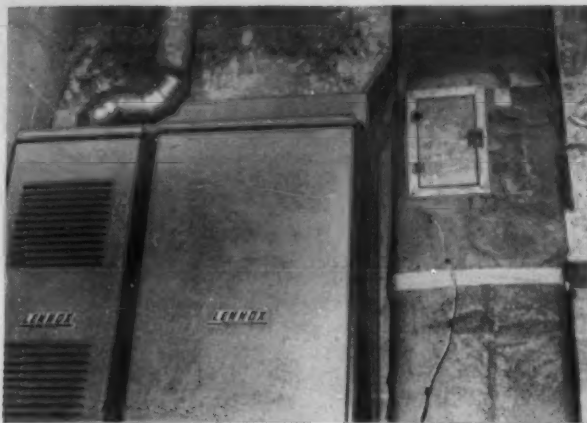
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Motel's Zoned System Uses 16 Units To Provide Flexible Heating, Cooling



EQUIPMENT ROOM along outside of building in which units that handle outside section of rooms are located. Note one of few exposed water towers at left.



SIMPLE FORM OF CONTROL is used on units handling a center section of rooms; a single heating and cooling thermostat is located in the return duct on an access door.



AIR CONDITIONING for the center sections of the Eastwood is handled by combination Lennox heating and cooling units located in car port area adjacent to each group of rooms.



DUCTWORK for outside rooms is run in a furred space just inside of the outside walls. This furred space is within the insulated envelope of the buildings. The entire furred area serves as return ductwork with connections through the plumbing chases to each room.

LONGVIEW, Texas—A zone-type system of year-round air conditioning utilizing Lennox combination units provides a high degree of flexibility in heating and cooling the new \$500,000 Eastwood Motor hotel here.

Located on U. S. Highway 80 on the outskirts of Longview, the 70-unit luxury motel was built and opened last summer by the Eastwood Motor Hotel Association. It is lavish in its accommodations, design, contemporary decor, and furnishings.

Among its features are a large swimming pool, a private fishing lake and picnic grounds, two spacious dining rooms, and a num-

ber of meeting and conference rooms to accommodate sales meetings, small conventions, and other local gatherings.

The motel covers 25,000 sq. ft. of space and each guest room has approximately 280 sq. ft. of space, plus adjacent parking area.

'Spread-Eagle' Design

Because of the spread-eagle nature of the Eastwood, a zone type central system of air conditioning was recommended by the Lennox Furnace Co., manufacturer of the equipment used in the project.

The 16 Lennox heating and cooling units installed have a cooling

capacity of 56 tons and a total heating capacity of 1,650,000 B.t.u./hr. input rating.

According to Lennox, the use of combination units in a zone type system permits control of various groups of rooms from a single point and prevents the system from being used more than comfort conditions require.

In periods of less than full occupancy, only those rooms in use need be cooled or heated, providing an appreciable effect on economy of operation, the manufacturer added.

Likewise, the use of 2, 3, 5, and 6-ton units permits the operation of a system of sizable capacity by

motel personnel with considerably less know-how than would be required by a single 25 or 40-hp. compressor.

Less Maintenance Needed

From a maintenance standpoint, the zone type units require less maintenance than would be required by individual room units. For example, the changing of filters is less frequent and there is substantially less wear and tear by eliminating repeated on-off turning by incoming and outgoing guests.

In two center sections of four guest rooms each, a Lennox heat-and cooling unit is located in an equipment room in the carport area adjacent to each set of rooms.

The supply ductwork is run overhead in furred space below the insulated ceiling. Single double-deflection supply registers feed conditioned air to each of the guest rooms, with integral volume controls carefully balancing the air being fed into each room.

Return air is drawn through the grille closet door and into a return air chase and through the return duct.

A single heating and cooling thermostat located in an accessible location on the return duct provides a simple means of controlling temperatures.

The two outside sections of rooms (eight each) are handled by two Lennox combination units located in an equipment room along the outside of the building.

Each of the units handles its own section of eight rooms. The ductwork for these is run in a furred space just inside the outer walls. The entire furred area serves as return ductwork with connections through the plumbing chase to each room.

Remote bulb thermostats provide heating and cooling control for each group of eight rooms and are located in the return duct of each of the air conditioners.

The air conditioner for the lobby, the coffee shop, and the private dining room is provided by two large Lennox units located in an equipment room between the coffee shop and the dining room.

This central location minimizes the ductwork and makes possible a shift in capacity from the coffee shop to the main dining room when overflow crowds are expected.

This supply ductwork has been furred in for pleasing appearance. Return air grilles to the equipment rooms have been placed below the ledgerstone planter box.

The second floor of the office building which houses the motel office and meeting rooms is served by a Lennox combination unit located in a closet immediately adjacent to the hallway.

When standing in the hallway outside the equipment room it is virtually impossible to hear the unit in operation, it is claimed.

Induced draft mechanical type cooling towers were used with the system—mainly because they could be effectively hidden from view. A total of six cooling towers strategically located required only minimum expense for piping connections while providing adequate water cooling for the entire system.

4 Separate Towers Hidden from View

Each of the four sections of rooms are handled by a separate tower completely hidden from sight. The two remaining towers provide the water cooling system for the main office conditioners.

To illustrate the simplicity of concealing the towers, one is located at the front of the main building but is camouflaged so that it is completely unnoticeable.

A variety of features were incorporated into the design of the motel in the interest of air conditioning efficiency—none of which detracted from the beauty of overall design; some, in fact, contributing pleasing features that otherwise might not have been incorporated.

For example, the roof is in a 2 in in pitch construction, with an extremely low overhang. This not only keeps the summer's sun load on the rooms at a minimum, but also contributes to the beauty of design.

The motel's sidewalls are of brick veneer, with 2-in. batt insulation. The roof, of 2-in. rigid insulation board, is supported by rough hewn 4 by 6-in. beams and is topped by a layer of chipped white marble.

The dazzling white color of the marble provides maximum reflection and minimizes the summer heat gain through the ceiling. The absence of any attic space adds a

(Concluded on next page)

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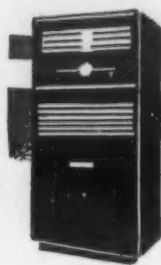
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AVAILABLE IN SIZES 4 TO 10 FT.



AIR CONDITIONING

Motel's Zoned Air Conditioning--

(Concluded from preceding page)

spacious appearance to the rooms. Liberal use of glass is made throughout the motel, with large floor-to-ceiling windows comprising the east and west walls (the sun sides) of every room.

Louvers Help Cut Heat Load

The upper sections consist of fixed panes, the lower of jalousie type windows. Final plans call for full height louvered panels extending from the edge of the roof to ground level to shade the glass.

The eventual installation of such louvers will add not only to the beauty of the motel, but are important from a summer air conditioning standpoint — to keep down the radiation of the intense morning sun on the large glass areas.

Glass is also employed on the interior walls of the gables, thus providing maximum daylight in the room without drawing a penalty from the sun.

The adjacency of carports offers further shading for the rooms.

Total cost of the air conditioning was \$35,000. It was installed by the A & M Plumbing & Electrical Co. of Carthage, Texas, of which Frank Tindell is the owner.

The motel was designed by W. L. Kelly, architect; and constructed by Harvey Little, builder.

Trane Engineers Meet In 3-Day Seminar

LA CROSSE, Wis.—Eighty-five of The Trane Co.'s 260 field sales engineers recently increased their knowledge of the company's refrigeration and air conditioning products by attending the second annual engineering seminar here.

During the three-day seminar, they heard nearly 30 technical and semi-technical illustrated talks. The seminar is part of a continuing educational program planned by Trane.

Fresh'nd-Aire Line--

(Concluded from Page 1)

"is designed to offer maximum protection and seasonal benefits to the many smaller aggressive appliance distributors who look favorably toward air conditioners as an additional means of sales and earnings."

Although the company's trade prices follow the conventional "F.O.B. factory" structure, any distributor or dealer placing pre-season buying commitments prior to March 1, 1955, for shipment at factory convenience qualifies for pre-payment of freight on the initial order as well as all subsequent orders shipped in season.

In addition, the size of an opening order placed prior to March 1 establishes the unit price at which the distributor will buy for the balance of the season.

Under the dating plan, distributors placing orders prior to March 1 for shipment at factory convenience will pay only 10% at time of shipment with the balance payable May 1, June 1, and July 1 in three equal payments.

In addition to In the Wall models, the company will market "Deluxe," "Custom," and "Standard" series of units during the forthcoming season.

PUSHBUTTON CONTROLS

The Deluxe series will have eight Electromagnetic pushbutton controls. Factory installed heater and thermostat will be supplied as standard equipment. Cabinets will be styled in gray-green trimmed in gold.

Units of 1/2, 3/4, 1, and 1 1/2-ton capacities will be available in Deluxe series. Retail prices are as follows:

A412/115	1/2 Ton	\$299.95
A434/115	3/4 Ton	359.95
A410/230	1 Ton	399.95
A415/230	1 1/2 Ton	499.95

The Custom series will be styled in cabinets of sand beige trimmed in gold. These units will have four pushbutton controls. Automatic thermostat will be available as an accessory for field installation where desired.

Custom models will be available in 1/2, 3/4, and 1-ton capacities. There will be no 1 1/2-ton units available in this series. Retail prices are as follows:

PA412/115	1/2 Ton	\$279.95
PA434/115	3/4 Ton	329.95
PA410/230	1 Ton	379.95

The Standard series will be styled in gray-green trimmed in gold and will have three pushbutton controls. Thermostat will be available as accessory for field installation where desired. There will be no 1 1/2-ton in the standard series.

Units will be available in 3/4, 1, and 1 1/2-ton capacities. Retail prices are as follows:

S434/115	3/4 Ton	\$289.95
S410/230	1 Ton	339.95
S415/230	1 1/2 Ton	449.95

Cabinet styling of all three lines will be similar and will feature a "flush mount" interior cabinet which will extend into the room less than 3 in., it was stated.

FLUSH MOUNTED INSIDE OR OUTSIDE

Another important feature of the Fresh'nd-Aire line, according to company executives, is the fact that all units may be installed either flush on the inside of the room, flush to the outside of the building, or to any position.

"This flexible mounting arrangement makes it possible for all models in the Fresh'nd-Aire line to offer the increasingly popular consumer feature of flush room mounting and at the same time meet all building code requirements which must be followed in installing room air conditioners in office buildings or other commercial and institutional establishments," the company said.

The In the Wall units will have the Electromagnetic pushbutton controls.

"Cabinets are designed so as to

allow installation in the wall with inside cabinet absolutely flush to interior wall surface," the company said. "Exterior of unit projects less than 3 in. outside of the exterior building wall line and, where desired, can be mounted absolutely flush to exterior wall."

Prices and model numbers on this new series of units will be announced in the near future.

The new Fresh'nd-Aire line will be backed by an expanded program of promotion, it was reported by Fresh'nd-Aire.

Southern Cal. RACCA Elects Brink President, Beck V. P.

LOS ANGELES—New president of the Refrigeration & Air Conditioning Contractors Association of Southern California, Inc. is Larry Brink, former executive secretary of the association and now a partner with Charlie Walling of National Refrigeration.

Don Beck, an officer of Kilpatrick & Co., is vice president and Sam Elster is secretary-treasurer.

NOW! RESIDENTIAL AIR CONDITIONING COMPLETELY WITHOUT WATER!

AIR Cool-A-Matic
BREAKS the WATER BARRIER!



HIGH CAPACITY at HIGH TEMPERATURES

35,700 B.T.U. @ 95°
34,900 B.T.U. @ 100°
34,160 B.T.U. @ 105°
33,400 B.T.U. @ 110°

NOT A SPLIT UNIT

One Single, Compact Factory-Assembled Unit! Easily installed by two (not four) tradesmen!

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HORIZONTAL and VERTICAL

Add To Any Warm Air System! Use present ductwork!

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INSTALL AIR-COOL-A-MATIC AND SET "SALE" FOR GREATER AIR CONDITIONING PROFITS!

BE AN AIR-COOL-A-MATIC DEALER IN YOUR AREA. Cash in on this GREAT advance! Install AIR-COOL-A-MATIC... the realistic answer to every homeowner's dream of air conditioning. Get lower unit costs, lower installation costs, and greater sales at bigger profits!



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AIR-COOL-A-MATIC is a product of the AUTOMATIC FIRING CORP. OF ST. LOUIS. MORE THAN A QUARTER OF A CENTURY OF GREATER COMFORT THROUGH BETTER PRODUCTS FOR CONTROLLING AIR TEMPERATURE!

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HEAT-X INTERCHANGERS WITH INNER-FIN... ASSURE...

MAXIMUM SUBCOOLING

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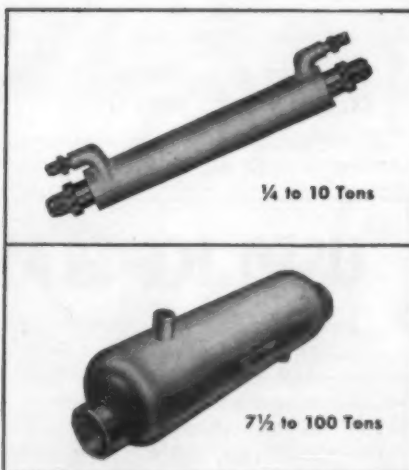


Heat-X Interchangers give you "most" where it's needed... maximum subcooling; and, "least" where it's needed... minimum pressure drop. Highly efficient longitudinal suction line with Inner-Fin—Heat-X exclusive—makes these top usability results possible:

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- Eliminates Flash Gas
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Refrigeration Problems and their solution

by Paul Reed

For Service and Installation Engineers



Paul Reed

Cleaning Air (5)

In the previous instalments of this article on "Cleaning Air," the attention has been entirely on the cleaning of air for use within an air conditioned space (cooled or heated). The cleaning has been for the purpose of making the circulated air more pleasant to human beings within the space, or to reduce dirt and odor accumulation on walls, furniture, and draperies, or on products being assembled or otherwise processed within the space.

Some of the material polluting the air originated within the space itself—lint, human and food odors, smoke, and particles dislodged from furniture, carpets, etc.; but some of the other contaminating material came in with the "fresh" ventilating or "make-up" air from the outside. In all cases, our main concern has been with the cleanliness of the air inside the space.

CLEANING THE DISCHARGE AIR

But there are many instances in which we must interest ourselves in cleaning the air that we discharge to the outside. In those cases, practically all of the material to be removed from the air originates within the building—usually from manufacturing or other processing activity.

There are three main reasons for wanting to clean the discharge air.

1. To prevent the contaminated air from being a public nuisance or a danger to health.
2. To prevent fouling the discharge ducts, fans, grills, or the outside of the building or nearby premises.
3. To recover certain materials that may have sufficient value to warrant salvaging them from the discharge air.

In some instances there may be a combination of two or all three of these reasons for cleaning the air discharged to the outside.

It is not often that air from spaces that have been air conditioned purely for human comfort is so contaminated that there is need to clean it before it can be discharged to the outside. Except on large installations, the air from an air conditioned space to be discharged to the outside is not in such quantity that its effect would extend much beyond a few feet from the outside discharge grille.

SAWDUST IN WOOD WORKING PLANTS

One of the earliest and very common examples of removal of material from discharge air was the planing mill, veneer mill, or other wood working factory. So much sawdust is produced in these plants that something has to be done.

Without some effort to remove at least the major part of the sawdust, the air within the plant itself would be excessively contaminated and would involve too much time and cost to keep the

machinery, floors, and the product itself free of sawdust. Moreover, the grounds outside would be covered with sawdust in a short time. It would be a nuisance to nearby homes and factories and a menace to public health.

And—an important factor—the sawdust is worth salvaging. Some of it is processed and various products made of it. Most of it is blown into boilers and used as fuel.

The most common means of removal of sawdust from discharge air is by means of a Centrifugal Separator also called a Centrifugal Collector, or Dynamic Precipitator—the funnel-shaped object that is such a familiar sight on the roofs of wood-working plants. It consists of a fan that operates at fairly high speed, and creates a vacuum that draws the sawdust away from the machines up to the separator. The sawdust-laden air enters the fan, and the sawdust, being heavier, is thrown out of the air stream by centrifugal force, into a hopper.

The centrifugal separator is also used for the removal of soot, coal-dust, foundry sand, sand from sand-blast operations, chaff from grain, dust from grinder wheels, pulverizers, and other materials of large particle size. It is not capable of doing a real cleaning job on air, such as air-filters or an electric precipitator can do, but it is suitable for "rough cleaning" of large volumes of air, and removal of large quantities of coarse matter.

AIR WASHERS FOR CHEMICALS AND ODORS

Air washers are widely used for the removal of odors, chemicals, and fine dust from various types of factories. Large quantities of ventilating air are brought into the plants, but before being discharged back again into the outside, are washed to remove the contaminating chemicals, odors, etc.

The water to the air washers is sometimes chemically treated to neutralize the contaminants, and the water from the washers is sometimes filtered or otherwise treated to prevent pollution of the streams into which the water from the washers is dumped. State laws and local ordinances often require treatment of either the discharged air or the contaminated water, or both.

Paint or varnish spray booths represent an instance in which the discharged ventilating air is so contaminated that damage will not only result to adjacent property, but the exhaust fans and ducts will be quickly damaged if the paint is not removed from the air stream. Air washers are usually used for this purpose, with the paint filtered from the water before it is drained to the sewer.

In some plants, such as those processing precious metals, there is enough value in the contaminants in the discharged ventilating air or washer water, to pay to recover them, even if there is no public or private health or nuisance involved, nor any legal requirements to be met.

GREASE FROM COMMERCIAL KITCHENS

In restaurant and hotel kitchens, the ventilation air from the hoods

over the stoves and grilles usually carries a great deal of grease, oils, and fats. They are in the form of hot oily vapors, which, as soon as they come into contact with the cool exhaust ducts or fan, deposit on them and soon form a thick layer of heavy grease mixed with small pieces of charred food, dust, and other solids.

These deposits are not only unsightly, but they affect the efficiency of the fan. Consequently the c.f.m. of air removed is reduced, and kitchen odors, and food and cooking oil vapors, increase.

Moreover, this greasy deposit is quite flammable, and is a very common cause of fires in hotel and restaurant kitchens. Hoods, exhaust fans, and outlet ducts are frequently inspected by fire departments and insurance inspectors.

Air washers are sometimes used, but a more common method is the use of cleanable filter-like units. These are placed in the outlet of the hood, ahead of the exhaust ducts and fan.

These units consist of metal frames with labyrinths of zig-zag parallel plates, or a series of layers of staggered wire mesh. The grease is removed by impingement on the relatively cool filters, so the grease, solids, etc., build up on the filter unit.

The filters are easily removable, and are cleaned by a steam hose, washing them in the dishwasher, or by spraying them with very hot water. After washing, they are allowed to drain dry a few minutes before being put back in their rack in the hood ahead of the ducts and exhaust fan.

This cleaning process should be done at least every week; or oftener if required. If they are washed frequently, it will be found that they can be kept clean much more easily than if the grease is allowed to form a heavy deposit.

SMOKE ABATEMENT BY IMPROVED COMBUSTION

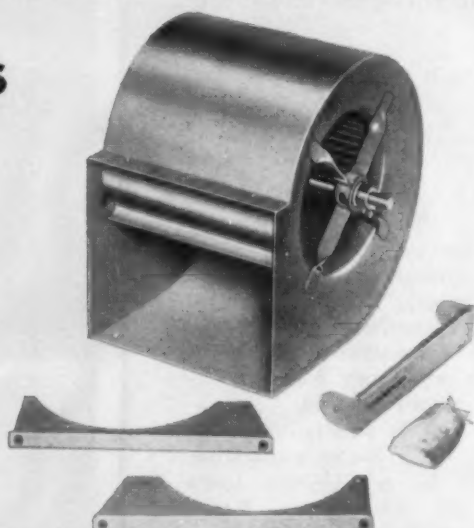
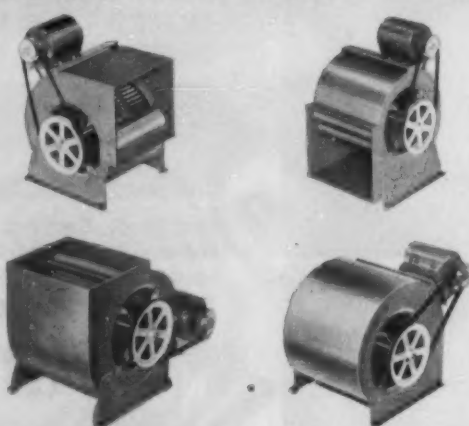
Combustion gas from boilers used in heating or steam generating plants is frequently among the worst offenders in air pollution. Heavy black smoke from a chimney indicates the presence of unburned particles of carbon.

Generally referred to as "soot," these black particles of carbon pollute the air for breathing, and cause excessive cleaning of furnishings in homes, offices, hotels, and public buildings and are one of the causes of respiratory infections. Most cities have "smoke abatement" ordinances, which, if enforced, can almost entirely remove this nuisance.

Not only is smoke from a chimney a public nuisance and health menace, but it is an indication of faulty equipment or careless methods of firing. Moreover, proper combustion, and increased efficiency of the boiler or furnace, results in a marked reduction in fuel costs. It is therefore, in the owner's interest to eliminate the smoke from his chimney.

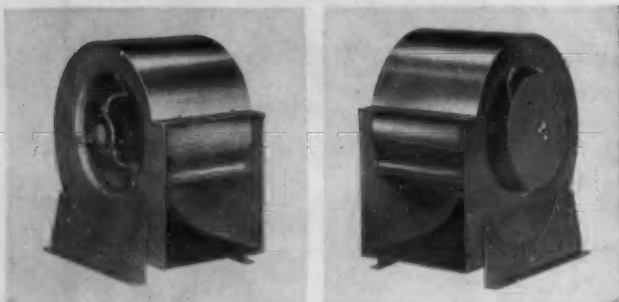
Electric precipitators have been used successfully for removal of soot and very finely divided particles of carbon and fly ash, in those special instances in which extreme cleanliness of flue gases has been required.

SOLVES 80% OF YOUR PRODUCTION REQUIREMENTS

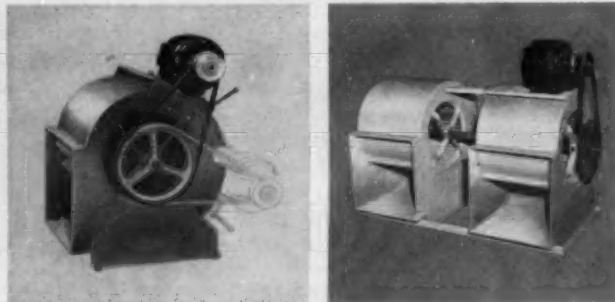


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- 2—Vilter Ammonia Compressors, duplex units, each unit consists of two eight-cylinder compressors direct connected to a 200 HP, 440 volt, 60 cycle electric motor.
- 1—Vilter Ammonia Compressor, duplex unit, consisting of two twelve-cylinder compressors direct connected to a 150 HP, 440 volt, 60 cycle electric motor.
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- 1—36" dia. x 16' Vilter Ammonia Condenser with 2—36" dia. x 16' receivers, with stand.
- 1—36" dia. x 16' Vilter Ammonia Condenser with 1—36" dia. x 16' receiver, with stand.
- 1—General Electric motor control center.

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What Was New

At the Builders Show

More pictures from the Builder's Show will be published in future issues of the NEWS. For further information on products pictured here, please use key numbers and "Information Center" form on page 22.



KEY NO. E-1411

NEW 7½-HP. WATERLESS CONDENSING UNIT that can be installed either outdoors or in the basement was shown to visitors to the Chrysler Airtemp booth by Marilyn McMahon.



KEY NO. E-1416

COMBINATION 3-HP. AIR CONDITIONING unit and gas-fired furnace with semi-automatic operation of dampers for gradual change in heating or cooling as needed is demonstrated by Lee A. Miles (l.) and R. B. Schmidt, sales engineers for Mueller Climatrol.



KEY NO. E-1417

ALL-ELECTRIC YEAR-ROUND AIR CONDITIONER, featuring a built-in 18,000-kw. heating coil was introduced at the show by Electromode Corp. and received careful study from visitors. The unit is completely wired as far as possible for quick installation.

KEY NO E-1412

BOTH INSIDE AND OUTSIDE components of the Sunbeam 2 and 3-hp. air-cooled air conditioning unit are emphasized by Pat Matteson (l.) and Sally Avery. The unit is made by Sunbeam Air Conditioning Div. of American Radiator and Standard Sanitary Corp.



KEY NO. E-1413

R. D. STRICKLER, director of sales for Lennox Furnace Co. enjoys showing model Joan Ross Lennox' new companion air conditioner and gas furnace. The model CB air conditioner is available with either air or water-cooled compressors in 2 and 3-ton capacities single stage and through 6 tons in two stage.

KEY NO. E-1414

KAY MARLYN SHOWS OFF Frigidaire's new 3-ton "Multi-matic" residential air conditioner less blower section for use with forced warm air furnace. This type unit is also available in 2-ton size.



KEY NO. E-1415

CARRIER's new model 38D conversion "Weather-maker," a remote air-cooled condenser that can be used with various types of Carrier cooling units, is explained to H. Eugene Elish, president of the Rockland County (N. Y.) Home Builders Association (l.), by Samuel Leib, residential sales manager in New York for Carrier Corp.



Over 70 Million Ranco Controls

Production of over 70 million controls is an amazing record in itself. But Ranco's real record is in the performance of those controls . . . performance that's bound to make them more popular by far than any other. Try Ranco and see for yourself. You'll find a Ranco Control for every job . . . a Control that cuts installation time, builds your service reputation, earns you extra profits.

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Mitchell expands line of Air Conditioners . . . Offers Air and Water Cooled Self-Contained units from 2 to 7½ tons

CHICAGO, ILL. — Today, 19 new Self-Contained package Air Conditioners were announced by B. A. Mitchell, president, Mitchell Mfg. Co.

Heralded as a milestone in modern air conditioning engineering, the new Mitchell line includes Store Coolers in 2, 3, 5, and 7½ ton capacities both air and water cooled. Residential Add-On units in 2, 3, and 5 ton capacities, air and water cooled. Year 'Round Residential Air Conditioners in 1½, 2, and 3 ton capacities air and water cooled with gas fired furnaces from 75,000 to 150,000 btu.

B. A. Mitchell pointed out that the new Mitchell Air Conditioning line was designed to meet the needs of the contractor, the service man and consumer, with such outstanding advantages as a Performance Guaranteed hermetic cooling system, new Slide-A-Way chassis and the amazing Electromagic Filter Eye.

"You expect more from Mitchell and you get all these amazing original air conditioning advantages. Mitchell discarded old fashioned air conditioning ideas and designs to give you more to sell."

"From the very introduction of room air conditioning, we have played a leading part in developing significant advances in this industry. Mitchell self-contained package air conditioners are being built with the best economies of modern mass production, giving the American public maximum quality and value in air conditioning," said Mitchell.

Recognizing this problem, Mitchell engineers developed the Electromagic Filter Eye that constantly measures an air conditioner's filtering efficiency and signals the user automatically when it is time to change filters for most efficient, most economical operation.

New Slide-a-Way Hermetic Cooling System

R. H. Lodge, Mitchell Sales Manager, demonstrates Slide-A-Way Chassis in 3 H.P. Residential Air Conditioner.

"This Slide-A-Way Chassis means that it will cost less to install and service a Mitchell," said Lodge at the premier showing of this new Residential line. He pointed out that it was not necessary to remove electric controls, damper linkage, baffles or sheet metal parts to slide out the chassis for service or inspection.

Performance guaranteed to provide comfort cooling in the space to be air conditioned, Mitchell self-contained units are hermetic systems, high in capacity and very quiet. Incorporating the latest welded hermetic design, the Mitchell refrigerant system is sealed



like a radio vacuum tube with nothing to adjust or oil. There is no need for seasonal pumpdowns, no belts to wear out or adjust, and Mitchell is always ready to operate. The heavy duty Mitchell compressor is super quiet and provides dependable service. There are no manhole openings or gaskets to cause leaks.



Mitchell has exclusive selling advantages

CHICAGO, ILLINOIS—An exclusive filter gauge, called the Electromagic Filter Eye, was announced today as standard equipment on all store units. This revolutionary air conditioning advance operates a positive signal light which tells the user when it is time to change filters.

As a deposit of dirt builds up in ordinary air conditioners, filters become clogged, capacity drops off, power and water costs increase—while cooling power decreases.

Recognizing this problem, Mitchell engineers developed the Electromagic Filter Eye that constantly measures an air conditioner's filtering efficiency and signals the user automatically when it is time to change filters for most efficient, most economical operation.

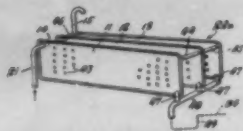
Mitchell merchandising program ready

A complete and detailed sales program is yours to build qualified prospects and close sales. Write today on your business letterhead for complete details on the Mitchell Packaged Air Conditioning Franchise.

MITCHELL MANUFACTURING CO.
Dept. X-2, 2525 N. Clybourn Ave., Chicago, Ill.

PATENTS *Week of September 28*

2,690,056. CONDENSER ARRANGEMENT FOR ABSORPTION REFRIGERATION APPARATUS. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden. Application Feb. 14, 1951, Serial No. 210,908. Claims priority, application Sweden April 17, 1945. 11 Claims. (Cl. 62-119.5.)



1. In a refrigerator comprising a cabinet including structure providing a vertically extending space at a side thereof, absorption refrigeration apparatus containing an inert gas and having a plurality of heat dissipating parts including a condenser, said condenser comprising a plurality of plate-like units each of which includes a pair of contacting metal sheets, each pair of such sheets having the peripheral edges thereof united and a fluid passage therebetween adapted to receive refrigerant in vapor phase and from which is adapted to flow condensate formed therein, each pair of said metal sheets being subject to the internal pressure within the refrigeration apparatus, and said plate-like units being disposed in the vertically extending space and positioned therein in spaced apart relation alongside one another to provide one or more vertically extending gaps therebetween to promote upward natural draft flow of air which passes in intimate contact with the exterior surfaces of said metal sheets.

2,690,055. ABSORPTION REFRIGERATION SYSTEM. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden. Original application Dec. 15, 1945, Serial No. 635,152. Divided and this application April 18, 1951, Serial No. 221,575. Claims priority, application Sweden Dec. 19, 1944. 9 Claims. (Cl. 62-119.5.)

1. In a method of refrigeration with

the aid of a system having a circuit for circulation of inert gas including a place of absorption, a gas heat exchanger and a plurality of places of evaporation in

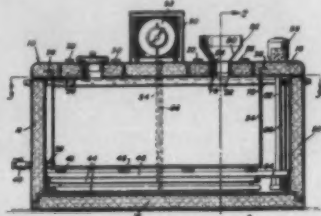


which refrigerant fluid evaporates in the presence of inert gas at different temperatures, said gas heat exchanger having a plurality of passages for passing in heat exchange relation inert gas flowing from and returning to said place of absorption, the improvement which comprises returning inert gas only from the lower or lowest temperature place of evaporation in the system to said place of absorption in a path of flow including at least a part of one passage of the gas heat exchanger in which the temperature of such returning inert gas progressively increases from one temperature level to a higher temperature level due to heat exchange with inert gas flowing in another passage of the gas heat exchanger, and flowing inert gas at a higher temperature from another of said places of evaporation to said place of absorption and initially introducing all of the inert gas in such path of flow to said one gas heat exchanger passage in a zone thereof at which the inert gas returning only from said lower or lowest temperature place of evaporation and approaching such zone is at a temperature substantially the same as that of the inert gas initially entering said one gas heat exchanger passage at said zone.

2,690,061. MILK TANK COOLER. Richard Markley, Madison, Wis., assignor to Dairy Equipment Co., Madison, Wis. Application April 9, 1951, Serial No. 220,045. 4 Claims. (Cl. 62-141.)

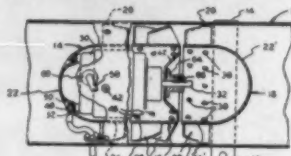
1. A milk cooler including a storage tank having a wall, means for cooling the exterior of said wall, a filling spout in said tank, a baffle in said tank directing milk from said spout into contact with

said wall for chilling milk during its passage into said tank, said cooling means comprising a cold water circulating sys-



tem including means spraying water against the exterior surface of said tank, a cabinet inclosing said tank and cooling means, said spraying means including conduits having spray nozzles, said conduits extending through the walls of said cabinet in sealed engagement therewith, means detachably closing opposite ends of said conduits for obtaining access thereto from exteriorly of said cabinet for cleaning the same.

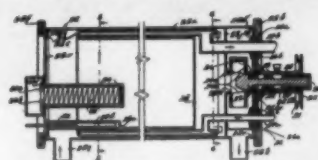
2,690,294. BLOWER. Beecher B. Cary, Jackson, Mich., assignor to Hayes Industries, Jackson, Mich., a corporation of Michigan. Application June 2, 1949, Serial No. 96,713. 1 Claim. (Cl. 230-117.)



An axial flow blower construction comprising in combination an outer tubular casing having openings therethrough at circumferentially spaced intervals for receiving securing means, a first hollow casing part having a closed dome-shaped end and an open-ended cylindrical portion, said first hollow casing having an electric motor secured therein with a power shaft extending beyond the open end of the casing, a second hollow casing part, said casing part being of cylindrical shape, means mounting said second casing upon said power shaft to be co-axial therewith and with said first casing part, with the said second and cylindrical casing part forming an extension of the cylindrical portion of said first casing part, both said casing parts being

concentric with the outer tubular casing, and means mounting said casing parts as a unit within said tubular casing part, said latter means comprising a series of similar sheet metal parts of substantially U-shape section mounted about the exterior surface of said first casing part in circumferentially spaced relation, each of said sheet metal parts having axially extending curved walls joined by an integral bridge portion with an opening there-through registrable with the openings in said outer tubular casing, the bridge portions of said sheet metal parts lying upon a common cylindrical surface corresponding with the interior surface of said outer tubular casing, said unit having axial sliding engagement with the said tubular casing surface by the engagement of said bridge portions with said surface, said second casing part carrying separate axially extending vane elements with curved surfaces forming axial extensions of the curved walls of said sheet metal parts but of different curvature thereto, said separate vane elements having clearance with respect to the inner surface of said outer tubular casing.

2,690,327. APPARATUS FOR HEATING AND COOLING LIQUIDS. Robert Sardon, Minneapolis, Minn., assignor to Pako Corp., Minneapolis, Minn., a corporation of Delaware. Application July 1, 1949, Serial No. 102,523. 1 Claim. (Cl. 257-10.)



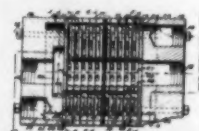
A device for regulating the temperature of a body of liquid having in combination, a container for liquid, said container being of cylindrical form and having end walls, a second container for liquid in said container, said second container having cylindrical walls spaced a small distance apart and connected at one end so that said second container is of annular form, spaced inlet and outlet conduits for said second container extending through one end wall of said first mentioned container, the outer wall of said second container being spaced a short distance from the wall of said first mentioned container, a third cylindrical member disposed within said second container, the same having a closed end adjacent the end of said second container from which said conduits extend and being open at its other end, the wall of said third member being spaced a short distance from the inner wall of said second container, said third member having a diameter many times greater than either of said distances, inlet and outlet conduits extending from said first mentioned container adjacent and substantially parallel to the ends thereof respectively, said conduits being adapted to extend to the body of water to be heated, a heating device extending through the other end wall of said first mentioned container and into the open end of said third member and into the open end of said second container, means for circulating a cooling medium through said

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office and offer only a brief summary of each invention. Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Copies should be ordered by number and title and a mention of the fact if they are either Designs or Reissues.

Address orders for any of the above to: Commissioner of Patents, Washington 25, D. C.

first mentioned conduits and said second container, means for circulating the liquid in said first mentioned container between the outer wall of said second container and the wall of said first container and between the inner wall of said second container and said third member, said means comprising a rotary vane impeller adjacent said closed end of said third member, the axis of which is substantially coincident with the axis of said containers, said impeller having an inlet opening at the side nearest the closed end of said third member, and a partition extending across said first mentioned container having a central opening communicating with said inlet opening, said impeller having its discharge portion substantially aligned with said outlet conduit.

2,690,328. HEAT EXCHANGER. William J. Keenling, Anderson, Ind. Application April 22, 1953, Serial No. 350,479. 5 Claims. (Cl. 257-245.)



1. A heat exchanger comprising a body having one system of spaced communicating passages for one liquid, said body having an inlet and an outlet for said one system, said body also having a second system of spaced communicating passages for another liquid, said body having an additional inlet and outlet for said other system, said passages of said one system being contiguous to said passages of said second system, some of the passages of said one system being radially disposed, some of the passages of said second system being also radially disposed, the radial passages of said one system being disposed between those of said second system.

(To Be Continued)

OUTSTANDING BUSINESS OPPORTUNITY

Leading air conditioning and refrigeration manufacturer, with industry's most comprehensive line, invites you to visit Booths 948-950, Heating & Ventilating Show, Philadelphia, Pa., January 24-28, 1955.

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POSITIONS WANTED

AIR CONDITIONING and refrigeration service engineer with extensive experience in application, installation, and trouble diagnosis on all types of central station and package installations. Complete details as to ability and experience will be supplied on request. Please address all replies to BOX A5150, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

ASSISTANT TO service manager. Opportunity to assume managerial responsibility as assistant to service manager for large manufacturer of air conditioning, heating, ventilating and heat transfer equipment. Service Department is expanding with the rapid growth of the company. Excellent chance to advance for an engineer with service experience in air conditioning and refrigeration industry. Send resume of qualifications to: Manager Staff Employment, THE TRANE CO., La Crosse, Wisconsin.

ENGINEER—CAPABLE of assuming responsibility for Sales Application Department. Qualified to manage Engineering Department, assuming complete responsibility for engineer of applied equipment through one-hundred tons. Prefer man with Carrier background and experience, and one with field experience who has followed this type of work for at least five years. Company has been Carrier distributor for past twenty years. Reply BOX A5138, Air Conditioning & Refrigeration News.

YOUNG COMPANY which has designed and is now producing 2 HP and 3 HP air-cooled packaged residential air conditioning units for homes seeks manufacturer's representatives to promote sales. These units are truly outstanding in many ways. If you are interested in building a future with us write BOX A5147, Air Conditioning & Refrigeration News.

EXECUTIVE ENGINEER—to head Compressor Division of nationally known Midwest manufacturing firm. Unusual organizational opportunity. Experience in hermetic sealed compressor design required. Send resume of education and experience. BOX A5149, Air Conditioning & Refrigeration News.

AIR CONDITIONING sales manager: Leading established Washington, D. C. distributor for nationally advertised line of air conditioning equipment, expanding packaged unit division, has immediate opening for thoroughly experienced man to take charge and build department, commercial and domestic. Do not apply unless experienced in air conditioning sales with ability to hire, train and supervise sales force, in exclusive metropolitan Washington area. Prefer man 30 to 40 years old, with car. Salary, override and expenses should approximate \$8,000 to \$10,000 yearly. Reply in detail and include telephone number. All replies kept in strict confidence. Address BOX A5150, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WILL CONSIDER any type of equipment for wholesale distribution in Minneapolis-St. Paul area. Especially interested in residential combination heating and air cooled, air conditioning units. Write: H. L. Ness, GARTNER REFRIGERATION AND MANUFACTURING, INC., 2913 Lyndale Avenue South, Minneapolis, Minnesota.

WANTED TO buy: Surplus new or good used gravity type finned Freon coils, with drip trays. Advise size, quantity and best price. RANDALL SUPPLY CORP., 12 West Humbird Street, Rice Lake, Wisconsin.

INTERESTED in buying 50 chest type freezers, 6 to 8-cu. ft. capacity. Kindly specify type, unit and make. BOX 5146, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

ONE USED Bishop & Babcock centrifugal fan, size 65, type PF, APP fan 1, complete with shear rails, less motor. In excellent condition. Also one new Trane centrifugal fan, size 20, type FC, class 1, less motor. Will crate and ship. Make offer. Reply to: J. P. GRIFFIN, INC., P. O. Box 2210, Tampa, Florida.

ATTENTION SERVICEMEN: Save 25 to 50% on your refrigeration parts. Send for our catalog of values today. Here is only one of our money saving offers. 1 1/2" O.D. copper connections x 14 1/2" overall vibration eliminators, \$4.65 each. Lot of 10, \$4.00 each. WALTER W. STARR REFRIGERATION SUPPLIES, 2533 Lincoln Avenue, Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

MIDWEST MANUFACTURER completely tooled and equipped to produce quality beverage coolers, instantaneous coolers and direct draws for companies under their label. Limited shipment can be arranged. Address all inquiries to BOX A5148, Air Conditioning & Refrigeration News.

Carrier Is Low Bidder On U.S. Ship Contract

WASHINGTON, D. C.—Carrier Corp.'s bid of \$210,720 for 48 complete water chilling units and \$18,180 for assorted spares for a total of \$228,900 was the low offer for the Bureau of Ships Invitation No. IFB-600-302-55-2.

Carrier offered its model 5F60, "F-12" compressor with 12 tons capacity at 35° suction and 105° condensing. The 5F60 is a six cylinder (2½ by 2) model which was belted down to 1,530 r.p.m. for a total of 51 c.f.m. displacement.

The condensers were sized at 10¼ in. by 6 ft., contained 80 tubes, and had a total area of 76 sq. ft. Water chillers were rated at 70.5 sq. ft. Motors (15 hp.), receivers, controls, valves, and miscellaneous equipment were included in the \$210,720 figure.

Only four bids were received.

Fogel Plans Forum Series For Fixture Distributors

PHILADELPHIA—A series of regional educational forums for market fixture distributors are being conducted currently by the Fogel Refrigerator Co. in conjunction with Proctor & Schwartz, manufacturer of all-metal adjustable shelving.

The forums are designed to exchange ideas and discuss all the physical factors of store planning, layout, and merchandising for the food stores of tomorrow.

Principal speakers at the meetings are Joe Finnerty, sales manager of Proctor's W/M Shelving Div., and Saul Goldberg of Fogel's store planning and merchandising department.

Meetings in Atlanta and Chicago are being planned for early this year.

They have already been staged in New York City and Pittsburgh.

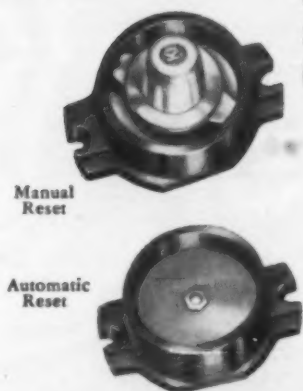


Manager of Large Electric Motor Shop Praises KLIXON Protectors

PHILADELPHIA, PA.: Mr. Joe Previty, well known for his activities in NISA and Manager of Penn Electric Motor Company, largest Philadelphia motor rebuilder and distributor of electric motors and supplies, has this to say about KLIXON Protectors:

"Out of the thousands of motors repaired by us each year, those equipped with Spencer Klixon Protectors require minor mechanical repairs only as Klixon Protectors provide protection against burnout."

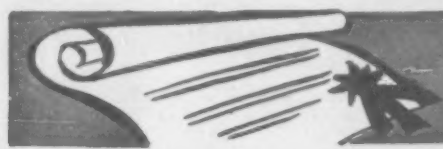
Klixon Protectors Reduce Service Calls and Repairs by Preventing Motor Burnouts



The KLIXON Protectors, illustrated, are built into the motor by the motor manufacturer. In such equipment as refrigerators, oil burners, washing machines, etc., they keep motors working by preventing burnouts. If you would like increased customer preference, reduced service calls and minimized repairs and replacements, it will pay you well to ask for equipment with KLIXON Protectors.

**METALS & CONTROLS CORPORATION
SPENCER THERMOSTAT DIVISION
2401 FOREST STREET, ATTLEBORO, MASS.**

KLIXON



Government Contracts

PROCUREMENT INFORMATION

The following is a list of proposed procurements issued by the various indicated U. S. Government procurement offices. This list is compiled and made available daily on a free pick-up basis. Prospective bidders may obtain complete bid sets by a request to the purchasing officer under which the purchase is listed in this Synopsis. Be sure to identify completely the bid invitation you wish by including in your request the item description, the invitation number or reference number and the opening date.

DEPARTMENT OF DEFENSE

It is not necessary to refer solely to the issuing office for additional data on a bid invitation issued by any of the following U. S. Army Ordnance Offices: Ordnance Tank Automotive Center; Detroit Arsenal; Frankford Arsenal; Picatinny Arsenal; Raritan Arsenal; Ordnance Ammunition Center, Joliet, Ill.; Rock Island Arsenal; Springfield Armory; Watertown Arsenal; and Watervliet Arsenal. Complete information on any purchase listed by any of those offices alone can be obtained from the Ordnance District Office nearest you. Its address is on file in your nearest Department of Commerce Field Office. Do not ask an Ordnance District Office for information on a purchase unless it is listed by one of the above-named offices.

Invitations for Bids numbers will be followed by the letter "B." Requests for proposals or quotations will be indicated in this column by the letter "Q," or, if numbered, the number will be followed by the letter "Q."

Description	Quantity	Invitation No.	Opening Date
Castle Air Force Base, Merced, California			
Replacement of worn evaporative coolers on base buildings No. Castle (21-55)A.	Job	IFB-04-604-55-12	1 Feb 55
Purchasing and Contracting Officer, Redstone Arsenal, Huntsville, Alabama			
Chamber, test, temperature, complete with blower, motor, heating elements, cooling coils, controls, recorders, etc.	Job	4-CS-81 and 82-55	17 Jan 55
Officer in Charge, Navy Purchasing Office, Washington, D. C.			
Pump horizontal, chilled water circulating 50 GPM each 60 PSIG complete with 440 V AC motors and controllers pump.	26	IFB-600-334-55-S	1 Feb 55
Horizontal air conditioning 135 GPM 30 PSIG complete with 440 V AC motors and controllers pump.	13	IFB-600-334-55-S	1 Feb 55
Fans, Centrifugal, Ventilating, 200 CFM at	54	(IFB-600-352-55-S)	10 Feb 55

Ice Machines Boost 'Pot Life' of Glue In 3-Shift Plant

RED LION, Pa.—Cleaning a glue pot in which the glue has hardened is roughly comparable to tearing up a concrete block, the Red Lion Cabinet Co. here has found.

But this manufacturer of television and radio cabinets has largely eliminated the necessity for doing so through the use of two York DER-2B "FlakIce" automatic ice makers.

The company uses the ice makers to produce packed ice in which the glue pots are kept.

It learned that any glue which uses a catalytic agent to obtain a fast "set," as is needed in the woodworking field, must be cooled to a temperature of 40 to 50° F. in order to assure "pot life" long enough for steadier output.

To accomplish this, the manufacturer can either run cold water lines into jacketed containers for glue pots or he can pack the glue pots in ice. Red Lion does both.

But it found depending on an outside source of ice was unsatisfactory, as the firm worked the clock around on three shifts. As deliveries were only made in the morning, this meant lost production if the ice should run short. So the firm purchased the ice makers and runs them 24 hours a day.

"The ice makers cut down lost time and increase production," declared the plant production manager. "It is much cheaper than buying ice."

To Cool Medical Bldg.

BUFFALO—An air conditioned four-story medical office building will be erected in the town of Tonawanda, it was announced by President Percy H. Freedman of the Queen City Realty Co.

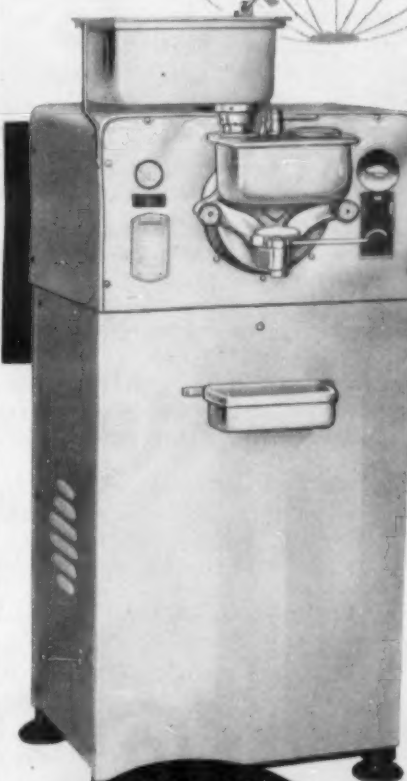
GENUINE JOE SAYS:

WAGNER HIGH-SPEED TESTED COMMUTATORS WILL LAST FOR YEARS AND YEARS



**WAGNER ELECTRIC CORPORATION
6471 PLYMOUTH AVE., ST. LOUIS 14, MO.**

DISTRIBUTORS...DEALERS...HERE IT IS!
in all the world...the *Lowest in Price!*



**MODEL 160
SHAKE DISPENSER
serves
200 SHAKES
AN HOUR**

- Easy! As simple as serving a soft drink.
- Produces shakes and malts at low cost—high speed—big profits.
- Giant capacity with 2½ quart refrigerated reservoir and 2½ gallon detachable mix reservoir.
- Sanitary! Direct from dispenser to customer. No handling. No contamination.
- Has famous exclusive Freez-King features, including continuous freezer action and "Seeing Eye" dial.
- 5 year warranty on compressor unit.

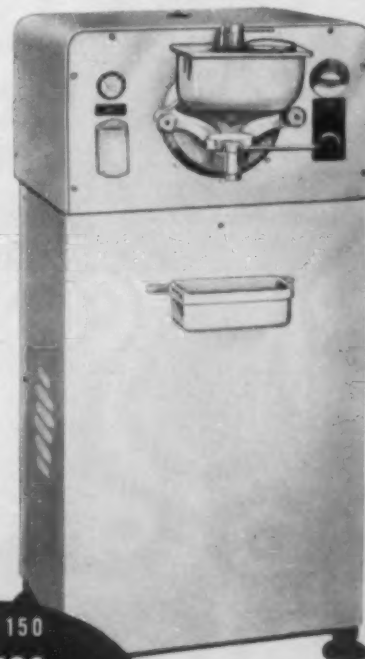
**TERRITORIES AVAILABLE
for master distributors & dealers**

**The FREEZ-KING CORP.
2518 W. Montrose Ave., Dept. D
Chicago 18, Illinois**

**2 NEW MODELS FOR THE
ECONOMY MARKET
by
FREEZ-KING**

BIG MONEY MAKER FOR

Lunchrooms Burger stands
Drive-ins Skating rinks
Supermarkets Amusement centers
Theaters Military canteens
Drug stores Grocery stores
Bus stations Industrial Cafeterias
... and many others



**Model 150
serves
SOFT ICE CREAM
or FROZEN
CUSTARD**

- Sales of a few gallons daily can pay for equipment in a few months.
- Uses less power—costs less to operate.
- Requires only four square feet of floor space.
- Easy to clean! Takes only 5 to 10 minutes instead of the usual ¼ to 1½ hours.
- Action is continuous. Freezer reservoir automatically refills with mix as finished product is drawn off.
- "Seeing Eye" dial shows if product is at proper serving consistency.
- Compressor warranted for 5 years.

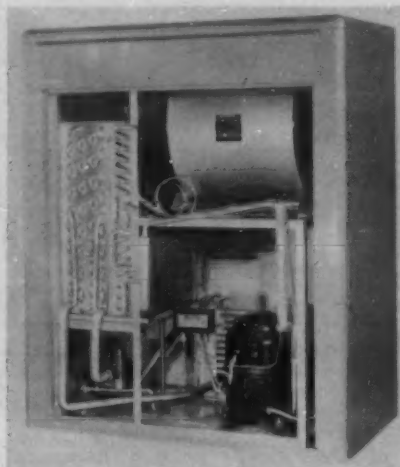
Deepfreeze Hits at Rumors of Sale

N. CHICAGO, Ill.—"Motor Products Corp. has no intention of recommending a sale to any company and has every intention of continuing its support of the Deepfreeze Appliance Div. and the continuing development of Deepfreeze products and the Deepfreeze franchise," stated a letter to distributors last week from F. F. Duggan, general manager of the Deepfreeze Div.

"Efforts of General Tire & Rubber Co. to secure control of Motor Products Corp. have failed and they have now officially withdrawn their offer for a stock exchange because they received so few shares in the tender. This reflects the confidence of the stockholders in Motor Products Corp. and its Deepfreeze Div."

Purpose of his letter, Duggan said, was to assure distributors that Deepfreeze appliances will continue. He referred to the disturbing effect on distributors of irresponsible rumors which had been circulated over a period of several months.

Robert J. Nixon, treasurer and acting president of Motor Products, said that a stock-buying plan organized by employees apparently had considerable effect on the withdrawal of the offer to buy stock by the prospective purchaser.



Hastings DKP-30

Hastings --

(Concluded from Page 1, Col. 5)

The cooling section itself consists of a four-row, all-copper water coil and a two-row, all-copper "Freon" coil.

"The Double-Kool two-stage cooling principle has been used successfully for many years," Hastings Air Control said, "but this is the first time it has been incorporated in a single, packaged vertical unit."

Advantages claimed for the unit are that it "cuts compressor size, cuts power bills, cuts water bills to less than half, permits high capacity with existing single-phase power, and permits up to 100% fresh air even on hottest days."

"This latter feature," it was stated, "is made possible by the fact that the hotter the incoming air, the more heat is picked up in the pre-cooling coil. There is no increased load on the compressor."

"The fresh air feature makes the Double-Kool unit particularly applicable for restaurants, taverns, assembly halls, ball rooms, bowling alleys, theaters, skating rinks, etc.—wherever ventilation is a problem."

The unit is designed to operate using water up to 70° F. It will be available with blower and discharge plenum if desired, and can be used for either residential or commercial installations.

This Double-Kool No. 30 has fully adjustable, four-way discharge louvers. Return air and fresh air are taken in through three large filters at the left side of the unit. Water and electrical connections are also at the left side.

There are cut-out panels in both sides so that grilles can be installed if desired. The unit is equipped with a Tecumseh compressor.

The company said the Double-Kool will be its featured item for 1955.

QUALITY CONTROL

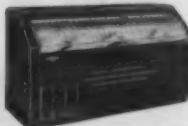
E
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Direct Draw Refrigerated Faucets



Upright Low Temperature Freezer



La Crosse Self-Contained Bottle Cooler



Bluebird Bottle Cooler-Remote

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WRITE FOR COMPLETE INFORMATION
LA CROSSE COOLER CO.
3000 LOSEY BLVD., LA CROSSE, WIS.
Export Office: 80 Broad St., New York City

Air Conditioned Village Findings--

(Concluded from Page 1, Col. 5)
of Nessel's report:

"All but one of the 21 owners were satisfied with the comfort conditions within the house, which included temperatures, control, and the temperature level maintained in the several rooms. . . .

"Fourteen of the 21 were content with the relative humidity. . . .

"Eight of the 21 owners complained of the noise. . . .

"Condensation was observed in or on the heat exchanger section of eight units. . . .

"A review of the heat gain calculations for the Village clearly indicates the economies that could be affected by more attention to construction and orientation on the part of the builder and architect. . . .

"Operating costs varied from \$0.80 to \$1.46 per 24-hour day during the months of the survey, depending upon the house and the weather, the average being about \$1.06. . . .

"The installing dealer needs to be strengthened as the intermediary between the user and the manufacturer. Too often he is deficient in skill and know-how and lacks a feeling of responsibility for the job."

In his report Cole indicated comfort in residential air conditioning was dependent first on constant air movement with humidity (40% to 60%) and temperature (75° to

78°) both being of lesser importance.

"We did not find comfort with intermittent fan operation," Cole declared.

At the special session on the Austin project, brief comments were made by other speakers, including George S. Jones, Jr., managing director of Air-Conditioning & Refrigeration Institute; Charles I. Hopkins of Veterans Administration; Fred McGhan of FHA; Frank Parsons of National Mineral Wool Association; Walter Blair of Texas Power and Light Co.; Harold Sarshik and E. L. Fausett, builders.

Drayer-Hanson Realigns Its Plant Facilities

LOS ANGELES—The most important realignment of plant facilities since the company's inception in 1910 is reported by Al Hanson, vice president of Drayer-Hanson, Inc.

It involves the conclusion of the last of a series of defense contracts with the government which now makes some 40,000 sq. ft. of plant space available.

"The company is stockpiling unprecedented backlogs of standard equipment in a portion of that area," it was explained.

Pipefitters--

(Concluded from Page 1, Col. 3)

The dispute came out of a work stoppage on a \$5 million air conditioning job at the Fidelity-Philadelphia building early last year when the two unions disagreed over which had the right to hoist heavy materials from the street level to upper floors.

When contractors awarded the work to iron workers, the pipefitters struck this and other major jobs in the Philadelphia area.

The National Labor Relations Board, acting on a complaint filed by the Bridge and Iron Workers, ordered the pipefitters to stop obstructing work on projects in dispute between the two unions. When the pipefitters refused to comply, the NLRB obtained an injunction.

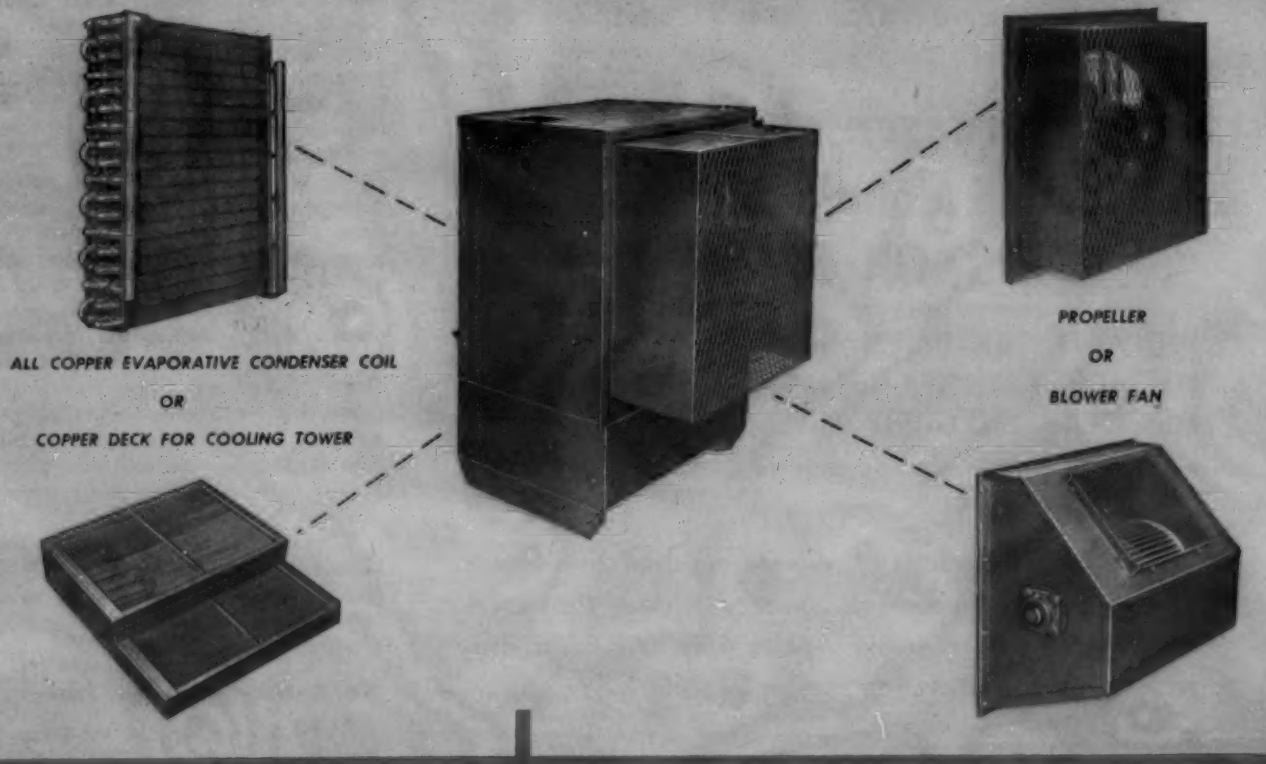
The pipefitters appealed the injunction order as being too broad in scope, in forbidding them to interfere with any jobs where the two unions were in conflict over the heavy lifting. The appeals court, in upholding the decision, ruled in effect that courts have the right to restrain unions from committing unfair practices in instances outside of the one cited.

Air Conditioned Hospital

MONTGOMERY, Ala.—A contract for the construction of the new air conditioned St. Margaret's Hospital here has been awarded to A. C. Sanford of Albany, Ga. on his low bid of \$1,125,902.

AMAZING NEW 4-WAY WATER SAVERS WITH ALL COPPER WATER SURFACES...

by **BUSH**



YOU SELECT

Inner-Fin Evaporative Condenser Coil (All Copper) or Copper Deck Cooling Tower with Propeller Fan or Blower Fan.

You'll find FLEXIBILITY in these Bush Water Savers, never before available. And Bush FLEXIBILITY enables you to maintain a complete stock, without being burdened with excessive inventory. Bush standardization makes this possible.

LOOK AT THESE COMBINATION POSSIBILITIES!

A Cooling Tower (with exclusive Copper Decking) can be used with either Propeller Fan or Blower Fan.

A modern Evaporative Condenser by simply replacing the Copper Decking with Bush's exclusive Inner-Fin coil.

Cooling Tower or Evaporative Condenser, you'll be completely astounded by the compact size.

See for yourself and be convinced, by taking a look at Bush Booth No. 250 at the International Heating and Ventilating Exposition in Philadelphia, January 24 to 28.



BUSH MANUFACTURING COMPANY

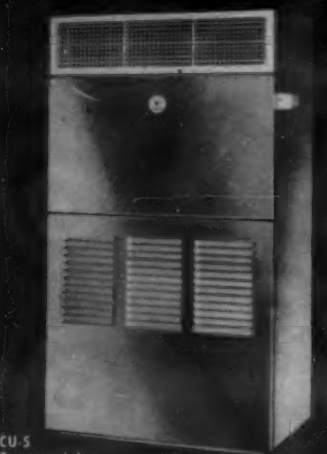
WEST HARTFORD 10, CONNECTICUT

NEW... Barkow

Weatherwise
**5-TON
AIR-COOLED and
WATER-COOLED
Air Conditioners**
For HOME or
COMMERCIAL Use



FU-5 Residential



CU-5 Commercial

Newest additions to the famous "Weatherwise" line, these self-contained complete package units offer modern cabinet styling plus these advanced engineering features: one and three-phase hermetic compressors, counterflow cleanable type condensers, aluminum fin evaporators with copper tube and capillary feed, and new cooling-heating switch controls suitable for remote installation and use with standard thermostats. Also available without plenum and fan, or equipped with steam coils.

AUG. G. BARKOW MFG. CO., INC.
2230 So. 43rd St., Milwaukee 15, Wis.